PAPER TRADE JOURNAL

ESTABLISHED 1872

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Vol. XCVI New York, February 2, 1933 No. 5

COMING EVENTS

AMERICAN PAPER AND PULP ASSOCIATION, Fifty-Sixth Annual Convention and Meeting, Pennsylvania Hotel, New York, February 13-16. Luncheon, Thursday, February 16.

NATIONAL PAPER TRADE ASSOCIATION OF THE UNITED STATES, Convention, Pennsylvania Hotel, New York, February 13-15. Luncheon, Wednesday, February 15.

TECHNICAL ASSOCIATION OF THE PAPER INDUSTRY, Convention, Pennsylvania Hotel, New York, February 13-16. Luncheons, Wednesday, February 15 and Thursday, February 16.

SALESMEN'S ASSOCIATION OF THE PAPER INDUSTRY, Annual Meeting, Pennsylvania Hotel, New York, Tuesday, February 14. Luncheon, Tuesday, February 14.

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Depreciated Currencies Affect Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 1, 1933—Hearings were held last week by a subcommittee of the Ways and Means Committee of the House of Representatives in connection with the Hill depreciated currency bill in which there has been so much interest in the paper trade.

Prior to the hearings President Hoover stated that "something" would have to be done in connection with this situation, following which the minority (Republican) members of the House held a caucus in which they went on record as favoring some kind of depreciated currency action without specifically backing any particular bill, of which there are many now pending in the House.

Stuart B. Copeland, vice-president and general manager of the Eastern Manufacturing Company, Bangor, Me., appeared before the Ways and Means Committee favoring the Hill bill. In part he said:

"Our pulp and paper and related industries were among the first to feel the new foreign invasion of our domestic markets under the stimulus of the depreciation of currencies in the countries of export. The reason is simple. The Scandinavian countries—where depreciation of currencies early occurred to a great degree—are large producers of pulp and paper, and they were already competing in the American market. With the added advantage of depreciated currencies, and with their market contacts already established, they were able to quickly step into a position of control in our markets. This they promptly did, and today they have an ever-tightening strangle hold on our American industry. Prices have been squeezed down to a point below our American cost of manufacture. More and more of the volume of production is being taken from American labor and industry. The migration of our industry to countries of the greatest currency depreciation is well on its way. Only such legislation as that here under discussion can stop it.

"Some other industries, which also encountered pre-currency-depreciation competition from foreign goods in our own markets, felt the new foreign invasion at an early date after the gold standard abandonment, just as our industry did. Wherever the depreciated currency countries already had contacts in our American market, they were enabled to press immediate results from their new advantage. Establishment of new market contacts naturally takes time, but foreign producers, not previously competing in the American market, were not slow to realize their new advantage; and one additional American industry after another has been and is being faced by the same unfair and ruinous competition which we have been hopelessly trying to combat for over a year. The list is growing daily, with its accompaniment of increased unemployment, shrinkage in values, depression of commodity prices below production costs, and reduction in the purchasing power of our people. It has reached such proportions that the secondary effect upon industries, not directly affected by foreign competition, is appalling. We, in this country, are in a vicious circle of lowering commodity prices, lessend industrial activity, lower purchasing power, lessend purchasing, and so on around the circle again. We have allowed ourselves to get into a position where our foreign competitors, by the iniquitous advantage of depreciation in their currencies, set the level of our market prices—and they are always set below the cost of production in American industry. Why not? It is to their advantage to stifle our competition if we are so unresourceful as to stand idly by and let them do it. One can't blame them, if we don't know enough to protect ourselves as Canada, France, and Germany did within a month after the depreciated currency "racket" started.

"The Hearings last May came so soon after the debasement of foreign currencies that statistical data was not then available to show the magnitude of the reaction on American industry. Those of us who had already been precipitated into the midst of the chaos were keenly alive to the impending disaster, but history was just in the making and had not yet been recorded for general consumption. It is doubtless this fact, plus a feeling or hope that the situation would correct itself—as some economists predicted—that deterred the Congress from taking remedial action at the last session.

"Instead of correcting itself, the situation has become progressively worse in our own and those other industries first affected, and many other additional industries have been designated a seat on the toboggan slide. The effect is cumulative. It grows like a snow ball rolling down hill. It is growing bigger and bigger and its speed is accelerating. Left to its own course, the inevitable result is a smash.

"Comparative volume of imports before and after currency depreciation does not tell the whole story. It must be considered in relation to changes in domestic production and consumption, and, even then, its effect on market price levels may be of the greater importance. American labor might be able to stand the strain of part time employment for a while, and American industry the strain of reduced operations on a reasonable price level in relation to costs, without drastic wage reductions. But, when the products of part time operation have to be sold below cost at prices controlled by foreign producers, it is an impossible combination. Labor has stood wage reductions stoically—its contribution to a fruitless attempt to stem the tide. Industry has accepted huge shrinkages in investments, cessation of dividends and vanishing of reserves. Today it is barely hanging on and can't last much longer.

"The enactiment of legislation for depreciated currency equalization would re-establish the competitive condition existing in our American markets prior to the general abandonment of the gold standard by our foreign competitors. It would provide revenue to the Federal Government in considerable amount. It is much heralded in the press of the country. It has the backing of the farm organizations, of the labor organizations, of the United States Chamber of Commerce and other similar organizations, and of industry as a whole. It should be enacted into law and made effective at the earliest possible moment. It is earnestly hoped that this group of the Committee on Ways and Means will present a favorable report and speed this legislation on its way to an early enactment."

Work of the Import Committee

The monthly bulletin of the Import Committee of the American Paper Industry reports a decision involving the undervaluation of M. G. narrow ribbed kraft wrapping paper shipped through a gulf port. The United States Customs Court held the correct dutiable value to be over $100 per ton, while the importer endeavored to secure its admission at a duty rate of 30 percent on a value of $67.50 per ton.

During December, according to Warren B. Bullock, manager of the Committee, Customs officials found misclassification or undervaluation on shipments of various papers valued at about $100,000. Included in the shipments on which the duty rate was advanced were twenty-six shipments of writing or hand made papers, thirteen of bristol which the importers claimed to be cardboard, twenty-four shipments of fancy and glazed papers, nine of imitation hand made book papers, and a dozen kraft wrapping paper shipments which were held to be undervalued.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

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Payment should be made upon receipt of invoice.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Analytical and Testing Methods

The Color of Pulp in Sheet Form, Measured With the Pulfrich Photometer and the Berauh Device. A. Backman. Papier-Fabr. 30, No. 37:556-58; No. 38:570-71; No. 39:579-582 (Sept. 11-25, 1932).—A practical, satisfactory and numerical characterizing of the color properties of unbleached pulp as well as bleached pulp is possible with the Pulfrich photometer with the Berauh device. The accuracy of the method, the influence of the surface and the peculiar light relations of the illuminating device are experimented with. The measurements are made by comparing the remission of a sheet of pulp with a gypsum surface. While an extra white bleached sulphite pulp possesses a remission almost as great as gypsum with nearly all light filters, the remission of dark sulphate pulp diminishes, according to the light filter, from a fifth to a third of that of gypsum. The results can be expressed in the Ostwalds color scale. Curves and other pertinent data are given.—J. F. O.

Acetic Acid as a Reagent for Testing Animal Surface Sizing. Erwin Diamant. Tech. Chem. Papier Zellstoff Fabr. 28, No. 4:53 (Aug. 8, 1931).—To test paper for surface animal sizing, moisten the sample with a solution of 30 per cent acetic acid, dry at 100° C and then make marks with a pen and ink. The acetic acid completely destroys rosin sizing but has no effect on the animal sizing.—J. F. O.

Experiments With a New Size Tester. Sadler. Papierfabr. 30, No. 37:553:-56 (Sept. 11, 1932).—A strip of paper 15 m.m. wide is fastened to a clamp and then by means of two pulleys and a variable weight at the other end, the strip of paper is allowed to be submerged into a beaker of water. The moment the strip of paper touches the water, a stop-watch is started and the time taken until the strip tears is expressed as the degree of sizing. This time checks with the time required in the ink penetration test.—J. F. O.

Concerning the new objective method for the determination of pH and its Importance to the Paper Mill. G. Gollnow. Papierfabr. 30, No. 34:446-448 (Aug. 21, 1932).—The author recommends the use of electrometric measurement of pH, which gives direct values and avoids subjective observational errors which are unavoidable in the colorimetric method. He then describes the apparatus designed by Dr. Selke which is a tube voltmeter using an electron tube from a radio set and a Freyeschen potentiometer. Two illustrations and pertinent data are given.—J. F. O.

Cuprammonium Viscosity Test in Pulp Evaluation. M. D. Reuben. Paper Trade J. 95, No. 13:29-30 (Sept. 29, 1932).—A brief discussion of the variables of the test, its applications to chemical pulp testing and the limitations of its application to purchase specifications.—A. P.-C.

Concerning the Influence of the So-called Mercerization Liquors on the Physical-Mechanical Properties of Wood Pulp. Hermann Wenzl and Martha Congehl. Tech. Chem. Papier Zellstoff Fabr. 29, No. 2:17-27 (May 7, 1932).—The maximum swelling and mercerization is obtained with 14 per cent sodium hydroxide. The viscosity of the cellulose dissolved in ammoniacal copper oxide increases with increasing concentration of the mercerizing liquor. An exhaustive bibliography is added.—J. F. O.

The Iodine Number Determination of Pulps. K. G. Jonas and E. Borchers. Papierfabr. 30, No. 19:301-304 (May 8, 1932).—Experiments have shown that the iodine number, like the chlorine number, varies directly with the lignin content of the pulp. But this iodine number cannot be used in place of the copper number, which theory is advanced by Bergmann and Machemer. The author gives a thorough explanation of the chemical equations involved in the reaction with iodine, the aldehyde groups being oxidized.—J. F. O.

The Estimation of Dirt and Shives in Pulp and Paper*

By James d'A. Clark[1], R. S. von Hazmburg[2] and R. J. Knoll[3]

Abstract

A novel method of visually estimating dirt and shives in pulp and paper is described in detail, with results which are shown to be many times more accurate than a numerical count. The quantity of dirt is determined in terms of its "equivalent black area" and is reported as so many parts per million. Similarly shives are reported in terms of their actual area in parts per million (square millimeters per square meter). The method is sufficiently rapid to be used in control work, yet accurate enough to be used as a standard test for either pulp or paper).

From time to time methods have been proposed for the measuring of dirt in pulp and paper, but none of them appear to be sufficiently accurate or definable to be practiced or even capable of a clear understanding of results to any who have not received an actual demonstration of and some experience with the method in question. For the most part, the estimates consist of enumerating the specks of dirt in a sheet of a given area without reference to their size or color, except that the specks are to be large enough to be seen and to be objectionable enough to be considered as dirt. It follows that with different intensities and qualities of illumination and with the personal idiosyncrasies of the operator, the dirt count varies accordingly.

In control testing, the inherent, unconscious wish of the operator to maintain uniformity, makes the finding of sufficient specks on days when the pulp or paper is actually cleaner, a matter of acute and systematic observation. A most commendable sense of loyalty to one's own firm tends to have a similar effect when examining competitive samples. On the other hand, on starting up days when the paper is relatively dirty, the counting of double or treble the number of specks seems to be a laborious and onerous task which creates a stronger and stronger urge to gloss over the smaller particles as the count progresses and usually results in a restricted conclusion.

Some have arbitrarily divided the dirt count into three classes, small, medium and large, and the number in each class counted. This has resulted in an improvement, but still leaves much to be desired as regards accuracy. Alternative methods suggest themselves, for instance for pulp, an estimate might be made of the total volume of dirt in a given sheet, or else the total exposed area. A satisfactory determination of the volume of dirt would be exceedingly difficult, and for practical purposes no more satisfactory than an estimate of the exposed area, which is the factor by which dirt is usually judged in paper, although there is something to be said for estimating the volume of dirt in pulp. However, all things being equal, the two are proportional and in consequence the simplest measurement should suffice.

The problem is further complicated by variations in both the intensity and the color of the dirt specks and these factors would vitiate results even if the true area of all the specks was very accurately estimated by microscopic means. Theoretically, it is possible to provide an elaborate apparatus and technique for measuring both the actual area of each spot and its degree of contrast, but it is clear that this would be impracticable for ordinary purposes.

Equivalent Black Area

In order to combine the conception of area and color intensity of a dirt spot it has been found desirable to coin a new term, "equivalent black area" is defined as the estimated area of a contrasting spot of dirt in terms of the area of that size of a perfectly black spot on a pure white background which would make the same visual impression. Consequently, a gray or colored spot would not have its actual area stated, but is "equivalent black area" estimated in terms of a specific size of a black spot which on a white background would appear as impressive.

Dirt Shives and Stock Spots

"Dirt" is defined as any foreign matter which is embedded in the sheet, which has a marked contrasting color when viewed by reflected light at different angles and for numerical purposes, which has an equivalent area of 0.03 square millimeters or over. This definition obviously does not include as dirt extraneous particles temporarily adhering to the surface of the sheet or shives or slivers which sometimes appear gray or almost black when viewed at a specific angle to the light.

If desired, other blemishes in a sheet such as shives and stock spots may be estimated by the methods to be described and for the purpose may be defined as follows:

"Shives" are slivers of wood, or unseparated fiber bundles, excepting stock spots, which appear almost opaque when viewed by transmitted light or which appear a contrasting color to the rest of the sheet when viewed by reflected light, and which have an actual area of 0.2 square millimeters or more. This definition is imperfect as it is sometimes hard to decide whether or not a shive is sufficiently opaque to fall within the category but in practice there are not many border-line instances where small undercooked fiber bundles are present which cannot be classed immediately one way or the other.

"Stock spots" are defined as irregular round-shaped portions of undefibered stock which appear opaque when viewed by transmitted light and which have an actual area of 0.5 square millimeters or more. They usually originate from sunburned groundwood pulp or imperfectly defibered broke or old paper stock.

Usually it is sufficient to estimate the stock spots by number only, and occasionally also the shives, although for the latter, an estimate of both number and actual area is usually preferable. If when viewed at different angles by reflected light a stock spot or shive remains darkly colored, its equivalent black area is included in the dirt estimation.

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* Presented at the meeting of the Delaware Valley Section of the Technical Association of the Pulp and Paper Industry, Philadelphia, Pa., January 20, 1933.

[1] Member TAPPI, technical director, Scott Paper Company, Chester, Pa.
[2] Research director, Scott Paper Company.
[3] Research chemist, Scott Paper Company.

Comparison Chart

For convenience in carrying out the test, a comparison chart[4] is required (Fig. 1) having sets of differently shaped black spots of the same stated area, printed or photographed on a white background. A photograph is preferable as the edges of the spots are not subject to extension by the spreading of the printing ink.

For routine tests only one side of the sample sheets need be examined, the top side, which will invariably be found to be dirtier than the wire side, presumably because some of the dirt particles are washed through the paper machine wire. For pulp, the top, or dirtiest side only should be examined as it is more representative of the body of the sheet. For ordinary control purposes only about one-half square meter of samples are necessary and it is advisable to cut the samples into small pieces of say 9 x 6 inches, and use from 16 to 20 such pieces. For accurate work, however, about a square meter should be used, cut into about 25 pieces.

Method

In turn each test sheet is laid on a white background, such as a piece of stiff white paper or board. If the stock spots and shives are also to be estimated, the sheet is best placed on a piece of white opal glass forming the top or an inclined side of a ventilated box, painted white on the inside and containing a 40 or 50 watt bulb which can be switched on or off as desired. The surface of the sheet is illuminated continuously from above with the equivalent of a 50 watt Mazda frosted bulb placed 4-feet away. Each dirt speck is examined and, using the chart, its equivalent black area is estimated and totaled if equal to or greater than 0.03 square millimeter. As an aid to determining the equivalent black area of a spot which is not black, after looking at it, it is compared with a chosen spot on the dirt estimation chart, while the eyes are momentarily thrown out of focus. If it is also desired to record the number of dirt specks, it will be found sufficient to count only those which have an equivalent black area of 0.05 square millimeter or over.

If after all the readings have been taken and any individual readings are more than three times the average, if possible a further set of sheets should be inspected to see if the high readings were justified and if not, then they should be reduced to three times the average of the others and included in the final average. An odd piece of dirt which is obviously unusual should be completely ignored.

After finding the area of sheets examined, the dirt should be reported as so many square millimeters of dirt per square meter of paper, which is equivalent to parts per million.

If desired, the number of specks having an equivalent black area of 0.05 square millimeters or over per square meter are also stated.

To estimate the number and area of shives in pulp it is necessary to make it into thin hand sheets not heavier than about 70 grams per square meter, examine them by transmitted light and to report them as being so many and/or having a certain area in square millimeters per square meter of pulp of a substance of 100 grams per square meter, or which is equivalent per hundred grams of pulp. Inclusion of extraneous dirt in the hand sheets in this case will not mar the results as it would with the dirt count. Shives and stock spots are also reported as so many per square meter.

[4] Photographic copies of this chart may be obtained from Berry & Homer, commercial photographers, 606 Arch St., Philadelphia, Pennsylvania.

Results

The following results were obtained during the evolution of the method and illustrate its operation and the degree of accuracy to be expected.

TABLE I
READING OF DIFFERENT OBSERVERS FOR NUMBER AND EQUIVALENT BLACK AREA OF DIRT ON THE SAME SET OF PAPER SAMPLES

	Top Side				Wire Side				Average of Top & Wire Sides			
Observer	No.	Diff.	Area/ M²	Diff.	No.	Diff.	Area/ M²	Diff.	No.	Diff.	Area/ M²	Diff.
A	38	+ 6	6.0	+0.3	35	+8	5.7	+.03	36	+ 7	5.8	+0.2
B	35	+ 3	5.6	—0.1	20	—7	5.1	—0.3	22	— 7	5.3	—0.3
C	28	— 4	5.3	—0.4	29	+2	5.5	+0.1	27	— 2	5.4	—0.2
D	44	+12	5.6	—0.1	36	+9	5.4	0	40	+11	5.5	—0.1
E	21	—11	5.5	—0.2	19	—8	5.5	+0.1	20	9	5.5	—0.1
F	28	— 4	6.4	+0.7	21	—6	5.5	+0.1	24	— 5	5.9	+0.3
G	32	0	5.8	+0.1	29	+2	5.1	—0.3	31	+ 3	5.5	—0.1
Ave.	32	6	5.7	0.3	27	6	5.4	0.2	29	6	5.6	0.2
Av. of deviation		18%		5%		22%		4%		20%		4%
Max. % deviation		33%		13%		33%		6%		40%		5%

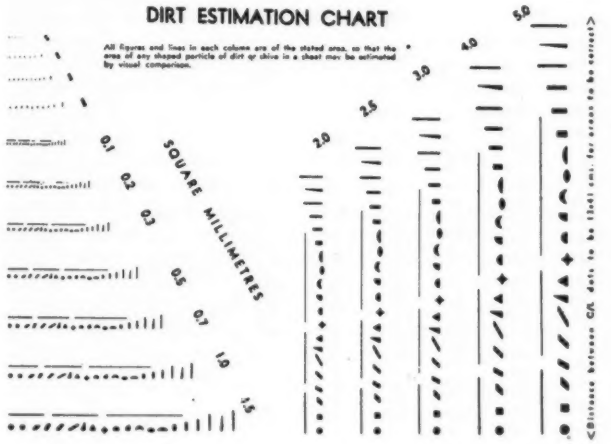
The area of the set of samples was 0.7 square meters. Of the above observers only one had a couple of days' experience with the methods and the other determinations were made after only a single demonstration. It will be noticed that despite the fact that it was required that only those specks having an equivalent black area of 0.05 square millimeters or over should be numbered, there was about 5 times the deviation for the numerical than for the area determination. This may be explained by the fact, that in counting the number of specks there is no balancing tendency in operation as when estimating the area. This compensating tendency may be observed from the following detailed counts of a single set of 24 samples by two observers where there is a difference of opinion evident on most sheets and yet the average results for a set are very similar.

TABLE II
INDIVIDUAL READINGS OF TWO OBSERVERS ON THE SAME SET OF 24 SHEETS

	1	2	3	4	5	6	7
A	18 (1)	8 (0)	17 (0)	10 (1)	20 (0)	15 (0)	21 (1)
H	17 (2)	9 (0)	14 (1)	14 (1)	16 (0)	23 (0)	24 (3)
	8	9	10	11	12	13	14
A	20 (2)	27 (2)	9 (1)	33 (2)	24 (0)	30 (0)	6 (0)
H	15 (0)	27 (2)	13 (0)	38 (2)	24 (0)	29 (0)	11 (0)
	15	16	17	18	19	20	21
A	24 (2)	10 (0)	15 (1)	11 (0)	10 (0)	14 (0)	15 (0)
H	17 (2)	7 (0)	15 (1)	12 (0)	11 (1)	16 (1)	16 (1)
	22	23	24				
A	18 (1)	39 (2)	23 (0)				
H	23 (2)	27 (3)	25 (2)				

Total area A-437 (1/100 mm²) or 4.37 mm² — H-4.43 mm²
Total number A-16 specks over 0.05 mm² — H-24 specks.

From the preceding tables it must be conceded that the estimation of dirt by area is very much more accurate



than numbering the specks, even if their limiting size is stated.

It may be thought that this compensating tendency would tend to equalize the dirt estimate on different samples of pulp and paper but such is not the case as may be observed from the next table. After estimating the equivalent black area of the dirt on the top (or dirtiest) side of the pulp sheets, they were disintegrated and made into hand sheets of approximately 20 grams per square meter substance (14 pound 25 x 38 inches — 500) and their total dirt estimated. This substance was chosen after having previously found by experiment that this was practically the thickest sheet where the whole of the dirt could be seen. The standard British, or tentative standard T.A.P.P.I. and Canadian sheet making equipment was employed, taking elaborate precautions to screen all the water used through heavy, fine, doubled silk crepe de chine.

TABLE III
ESTIMATES OF DIRT IN DIFFERENT PULPS AND ON HAND SHEETS MADE FROM EACH

Pulp		E. B. Area of Dirt on Pulp p.p.m.	E. B. Area of Dirt in Paper p.p.m.
Bleached sulphite	K	4.3	3.0
Bleached sulphite	L	6.2	4.0
Another sample	L	6.2	4.5
Bleached sulphite	M	7.1	3.8
Unbleached sulphite	N	10.2	6.0
Another sample	N	11.0	8.0
Mechanical pulp	O	11.2	6.8
Unbleached sulphite	P	12.0	7.7
Unbleached sulphite	Q	12.8	7.0
Unbleached sulphite	R	14.7	7.1
Another sample	R	23.0	10.5
Another sample	P	24.0	10.4

Some of the samples were drawn from different bales of the same brand and illustrate possible bale to bale variations. Note that by multiplying the figures in the last column by five, the result will be in square millimeters of dirt per 100 grams of paper stuff.

If the dirt in the pulp is plotted against the dirt in the subsequent hand sheets, a fairly smooth curve results which gets steeper as the quantity of dirt increases. If the same amount of dirt were found in the hand sheets as in the corresponding pulps, and all the dirt in an equivalent layer of the surface of the pulp sheets could be evaluated, the figures, of course, would be identical. A certain amount of the dirt is broken up in the disintegrator and either becomes too fine to be counted, or else is lost through the wire in forming the sheets. This is particularly true of dark colored dirt like shives prevalent in some unbleached sulphite pulps, which are readily broken up and made unnoticeable. Degrees of opacity of the surface layer of the pulp sheets also affect the results.

It was originally contemplated that the dirt in a pulp could be estimated from the hand sheets using the regular procedure taking precautions to prevent the inclusion of adventitious dirt. In practice, however, this proved to be so difficult and the relating curve between the dirt in the original pulp and the resulting hand sheets so consistent that it has been decided to estimate the dirt in pulp from the pulp sheets directly so simplifying the procedure.

At first sight, it might seem as if the methods outlined required a great deal of time and care to carry out, but after a surprisingly short time the standard areas are memorized and as each sheet is examined the areas of all the particles present are added up mentally with the same celerity as a short column of figures.

The authors wish to thank the Scott Paper Company for permission to publish this paper.

Stiffness Constants As An Aid To Matching Press Rolls*

By Harold E. Wright[1]

Abstract

The rational application of the formula $d = \frac{5\,wl^3}{384\,EI}$ *to the crowning of press rolls results in matching these rolls so that when the crown on one is used up, the crown on the other is used up. All variables involved follow definite laws and can be determined for each pressing set-up. The relation of roll crown to plastometer or roll softness is shown for a particular set-up. Since the modulus of elasticity (E) and moment of inertia (I) can not be readily calculated for most press rolls, due to variations in section (truss construction) and the presence of several materials of construction in varying amounts, the method outlined is for the experimental determination of the product (EI) which is called the "stiffness constant." "Stiffness constants" determined by this method are of the order of* 4.0×10^{10}.

A later paragraph entitled "Results" describes briefly the results which can be expected from a similar survey.

Sheet moisture is usually a highly important item in paper manufacture, especially where particular finish standards are to be maintained. The press section and the operation of expression present to the modern paper mill a prime variable exerting considerable effect on sheet moisture in both the machine and cross directions. Press rolls by analogy to the more or less common clothes wringer, express water by allowing only the sheet of uniform wet bulk or thickness to pass the nip. For the purpose of obtaining this uniform bulk, crowns must be so adjusted that when the top roll crown is used up, the crown on the bottom roll must be used up. This latter practice is termed matching press rolls. Matched press rolls can not be expected to be a drying or moisture uniformity cure-all, since they insure only the pressing to a uniform wet bulk. Indeed, they show up again the need for extremely uniform distribution of the bone dry sheet at the slice or inlet, for uniformity of wet bulk does not mean uniformity of moisture or uniformity of the oven dry sheet constituents.

Realizing a need for perfectly matched press rolls, the author set about to determine the variables influencing the quality and quantity of crowns required and the considerations involved in matching these rolls.

Procedure and Calculations

We had one definite starting point for our work in determining the quantity of crowns required, and that was that there was an apparently definite narrow range of pressure which the sheet would and could stand at each press. By averaging all the available data present on these constants, we found that 130 pounds per square inch at the second press and 270 pounds per square inch at the third press were reasonable pressures which the specific sheet tested, would stand. These figures were ob-

* A thesis to be presented to Ohio State University for the degree of chemical engineer.

[1] Laboratory superintendent, Kimberly-Clark Corporation, Niagara Falls, N. Y.

tained through calculations involving the leverage ratio tension dynamometer readings, and the weights of the various rolls. (Fig. 1).

This pressure we wanted to exist in the nip at all times.

We realized that this nip pressure was a function of nip width, under normal loading, so by means of carbon paper, we determined in a crude fashion the relation of nip width to roll softness or plastometer, roll diameters and rubber cover thickness being assumed constant. We found that for our purposes nip width vs. roll plastometer reading was a straight line function of the equation.

$$W = \frac{p\text{-}17}{53}$$

Since we were actually interested in nip area (A) and A = roll face x w, then in our particular case

$$A = \frac{p\text{-}17}{53} (196) = 3.7\ p - 62$$

For an upper 2nd press roll, we have to crown for a weight which is represented by:

$$[\ (3.7\ p - 62)\ 130\ ] = \text{Roll Weight}$$

An upper 3rd press roll:

$$[\ (3.7\ p - 62)\ 270\ ] = \text{Roll Weight}$$

Obviously the weight for which the lower press rolls are to be crowned would be:

$(3.7\ p - 62)\ 130$ for the lower second press

and

$(3.7\ p - 62)\ 270$ for the lower third press

From Boyd's "Strength of Materials" we learn that the formula for the deflection of a uniformly loaded beam is

$$d = \frac{5\ wf^3}{384\ EI}$$

where d = Deflection in inches.
w = Total weight or uniformly distributed weight times f (in pounds)
f = Beam length or face (in inches)
E = Modulus of elasticity (pound per square inch)
I = Moment of inertia.

We have found good success in crowning rolls for twice the deflection which is customary in crowning procedure, therefore our basis crown formula becomes:

$$\text{Crown} = \frac{5\ wf^3}{192\ EI}$$

This equation is applicable to both upper and lower press rolls of the common type. In the equation we have determined the weight (w) the roll face or length (f) but have no means of determining E, the modulus of elasticity or I, the moment of inertia.

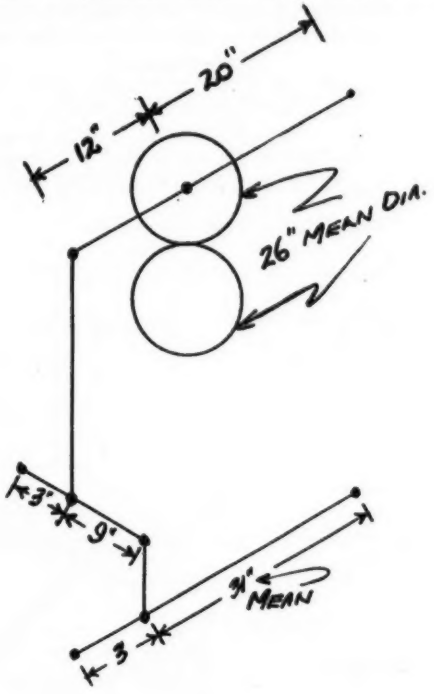


FIG. 1

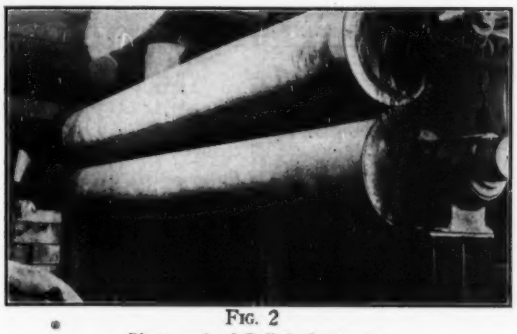


FIG. 2
Photograph of Roll Deflectometer.

The modulus of elasticity is a function of the materials of construction which, in our case, was a minimum of two materials in varying amounts. The moment of inertia is a function of the sectional design which, in a *truss* constructed roll, in our case, was a variable depending on roll face. Furthermore, we were at a loss as to just how closely the builders had adhered to the designs which we had for examination.

Our only source of information on these two unknowns, was to design equipment (Fig. 2) which would enable us to deflect these rolls under known conditions and experimentally determine the product (EI) for each roll. We called this product EI our stiffness constant, and we named our equipment a Roll Deflectometer. Refer again to Fig. 2 while the deflectometer is being described.

We had two suitable bearings erected, and constant level floor plates placed in the floor. By means of a turn buckle-dynamometer link arrangement, we were able to administer concentrated loadings and measure the deflections resulting, with accurate inside micrometers. By means of these data and data taken with uniformly distributed loadings, we were able to obtain the stiffness (EI) constants for each roll. The use of this deflectometer also gave us information as to the quality or type of crown required since we were able to see mathematically what type of deflection curve we had under uniform loading characteristics.

The charts shown in Fig. 3, illustrate some deflection curves obtained by the use of this deflectometer. The reader will note that the EI constants were calculated from the formulae known to hold for each mechanical set-up. The work in determining what systems of loading to use, was governed largely by the design prints of the rolls. For instance, the strongest spot, the weakest spot and the center of the roll, were picked for concentrated loading.

From the study on stiffness constants of 196 inch press rolls, we were able to use the following equations in determining the crowns required:

Upper second press rolls:

$$\frac{(472\ p - 8060 - w)\ f^3}{38.4\ EI} = \text{Crown}$$

Lower second press rolls:

$$\frac{(12.6\ p - 211)\ f^3}{EI} = \text{Crown (Fig. 4)*}$$

Upper third press rolls:

$$\frac{(1008\ p - 16870 - w)\ f^3}{38.4\ EI} = \text{Crown (Fig. 5)}$$

Lower third press rolls:

$$\frac{(26.3\ p - 440)\ f^3}{EI} = \text{Crown (Fig. 4)*}$$

* The fact that there is no subtractive upper roll weight in the requirement of the lower press rolls enables us to simplify the denominator.

TYPICAL ROLL INVESTIGATION DATA SHEET

Axis No. 1	Roll No. 3 Position No.	Weight 11,196 Rubber Covered Sag.	No Load	Conc. in Mid. 3100 Lb.	Length 196" Conc. 26¾" from End	Sag.
	1	—.0019	4.3333	4.3312	4.3302	—.0031
	2	—.0001	4.4825	4.4824	4.4779	—.0046
	3	—.0104	4.6491	4.6387	4.6512	—.0104
	4	—.0102	4.6884	4.6782	4.6849	—.0035
	5	—.0056	4.7638	4.7582	4.7653	—.0015
	6	—.0016	4.7238	4.7212	4.7250	—.0012
Axis No. 2	(90 degrees from Axis No. 1)					Sag.
	1	.....	4.3333	4.3326	.....	—.0007
	2	.....	4.4899	4.4820	.....	—.0079
	3	.....	4.6522	4.6428	.....	—.0094
	4	.....	4.6971	4.6827	.....	—.0144
	5	.....	4.7684	4.7674	.....	—.0010
	6	.....	4.7249	4.7226	.....	—.0023

A standard form of crown equation for upper press rolls would be:

$$\frac{(k_1 p - k_2 - w)\ f^3}{k_3\ EI} = \text{Crown}$$

where k_1, k_2, and k_3 are constants.
For lower press rolls this formulae could be simplified to the following form:

$$\frac{(k_1 p - k_2)\ f^3}{EI} = \text{Crown}$$

where k_1 and k_2 are constants.

Since these equations exist in three, four or five unknowns, presentation to the average mill operator is difficult.

Figs. 4 and 5 represent the method we have found to be best, although our success is limited even with the presentation in this form.

Results

The results actually obtained from this survey can be tabulated as follows:

1. Shortcomings and advantages of various press rolls were vividly and unquestionably shown up. Design points were suggested.
2. Felt blue lines ran straight without crumbs or other mechanical aids, when the section contained "matched" rolls.
3. Pressing defects such as dry or wet edges can be cured by matching.
4. The need for an advanced roll grinder to administer not only the amount but also the correct type of curve is clearly shown.
5. The EI or stiffness constants under our particular

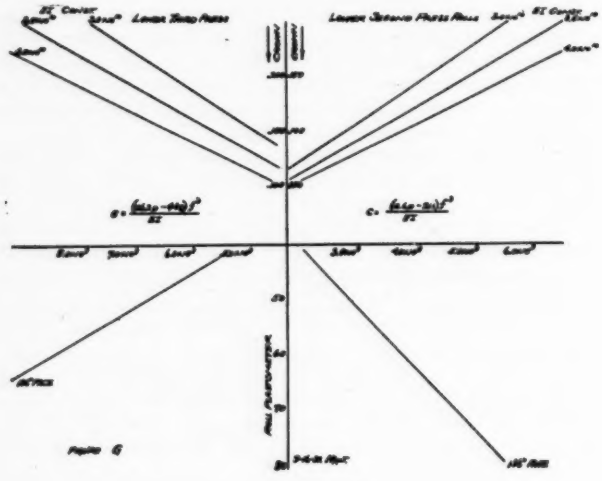


FIG 4

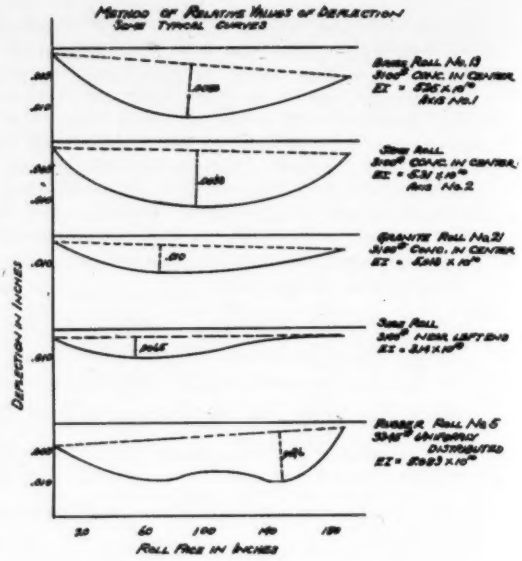


FIG. 3

set-up were determined to fall into the following ranges:

	EI Constant	
Granite Rolls	4.0×10^{10}	Truss Constructed
Brass Shell Rolls	5.5×10^{10} to 5.7×10^{10}	
Rubber Covered		
Cast Iron	3.4×10^{10} to 3.9×10^{10}	

Conclusion

The methods outlined above have proven to be an effective working tool in exploring the realm of pressing. In general, this attack could be made on any set-up for pressing, whether a paper problem or not, and would yield a set of results comparable to those outlined.

Acknowledgement

The author wishes to thank Messrs. I. W. Kersten, R. L. Valentine and the Niagara Falls laboratory staff of the Kimberly-Clark Corp. for the assistance given in carrying out the testing details. He also wishes to thank the Kimberly-Clark Corporation for allowing him to use this material in seeking the degree.

REFERENCES CITED:

"Strength of Materials", by J. E. Boyd (McGraw-Hill Publishing Company, New York.
Kenwood Bulletins, No. XIV, F. C. Huyck Co.

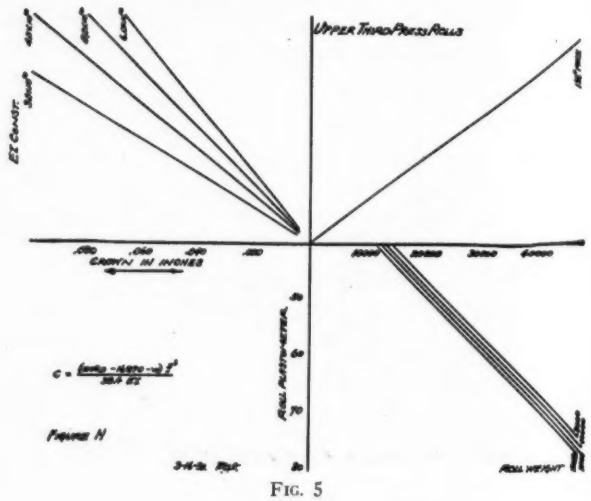


FIG. 5

Program for TAPPI Meeting, Feb. 13-16

The following is the program for the annual convention of the Technical Association of the Pulp and Paper Industry, to be held Monday, February 13, to Thursday, February 16, 1933, at the Pennsylvania Hotel, New York:

Monday, February 13

GENERAL SESSION—PARLOR 2

9:30 A.M. Call to order by President Abrams
Announcements

10:00 A.M. JOINT MEETING—TAPPI RAW MATERIALS DIVISION AND A. P. P. A. PULPWOOD DEPARTMENT—PARLOR 2

Symposium—Economics of Fibrous Raw Materials

Chairmen—Messrs. Ostrander, Parsons and Traquair

1. Pulpwood Holdings, a Company Asset, by George Ostrander
2. Variation in Yield and Quality of Pulp Made of Spruce from Different Regions, by C. H. Reese
3. A Consideration of Forest Management from a Competitive Viewpoint, by K. A. Swenning
4. Cellulose from the Whole Cotton Plant by H. R. Murdock

10:00 A.M. ENGINEERING DIVISION—PARLOR 1

Symposium—Alloys and Linings

Chairmen—Messrs. Bearce and Miller

1. Stainless Steel Linings for Vessels Used in Chemical Processes, by W. E. Jominy and R. S. Archer
2. Chromium-Nickel-Iron Castings in the Sulphite Service, by G. L. Cox and F. L. La Que
3. Tentative Specifications for Chromium-Nickel-Iron Castings for Sulphite Pulp Processing Equipment
4. Digester Lining Developments, by A. F. Richter (By title)
5. Metallic Digester Linings, by W. C. Johnson

10:00 A.M. CONVERTING and CONSUMING DIVISION—FOYER BANQUET HALL

Symposium—Paper Coating Pigments, Adhesives and Color

Chairmen—Messrs. Nickerson and O'Connor

1. Clays and Coating Color Formulas
2. Round Table Discussion led by J. J. O'Connor
3. Opacity and Whiteness Test for Paper Coating Pigment, by H. R. Rafton

2:00 P.M. TESTING DIVISION—PARLOR 1

Symposium—Paper Testing

Chairmen—Messrs. Reed, Scribner

1. Developments in the Microscopy of Paper, by J. B. Calkin
2. Physical Paper Testing Methods, by J. d'A. Clark
3. Soap Wrapper Properties, by T. L. Crossley (By title)
4. Chemical Paper Testing Methods, by P. F. Wehmer
5. Testing Resistance of Butchers Wrapping Paper to Blood, by C. E. Libby
6. The Value of Paper Stiffness Tests, by F. W. Adams and John Bellows

2:00 P.M. CONVERTING AND CONSUMING DIVISION—FOYER BANQUET HALL

Symposium—Paper Coating

Chairmen—Messrs. Nickerson and O'Connor

1. Coating Mill Waste
2. Improved Wax Test for Measuring Coated Paper Sizing, by H. M. Annis

Joint Meeting

2:00 P.M. TAPPI RAW MATERIALS DIVISION, OPERATING DIVISION AND A. P. P. A. PULPWOOD DEPARTMENT—PARLOR 2

Symposium—Pulpwood Handling and Conversion

Chairmen—Messrs. Ostrander and F. C. Clark

1. Modernizing Pulpwood Operations
2. Efficiencies in Wood Room Organization,
3. Pulp Manufacturing Efficiencies, by J. A. C. Kavanagh

4:30 P.M. COMMITTEE MEETINGS—GRAND BALL ROOM

All committees of the Technical Association will meet separately to discuss program, objectives, scope of 1933 work, methods of attack, schedule. Arrangements will be made to enable Divisions to meet for dinner at 6:45 p.m.

Tuesday, February 14

9:30 A.M. GENERAL SESSION—GRAND BALL ROOM

Chairman—Allen Abrams

1. Report of Secretary
2. Address of President
3. Code of Ethics
4. Appointment of Nominating Committee
5. Divisional Development Reports
6. White Paper from Slash Pine, by C. H. Herty
7. The Manufacture of Pulp Insulated Wire, by J. S. Little

2:00 P.M. MANAGEMENT DIVISION—PARLOR B

Symposium—Vocational Education

Chairmen—Messrs. Maull and Noyes

1. Training Requirements because of Technological Changes in the Industry, by C. E. Libby
2. State Participation in a Training Program for the Pulp and Paper Industry, by J. R. Crowley
3. The Value of Job Analysis in Arranging an Educational Program for the Industry, by N. B. Giles
4. Report of the Education Committee, by H. G. Noyes

2:00 P.M. ENGINEERING DIVISION—PARLOR C

Symposium—Heat, Light and Power

Chairman—Messrs. Bearce and Darling.

1. The Application of Steam Turbines in the Paper Industry, by H. S. Hemenway
2. The Use of Metal Enclosed Switchgear in Paper Mill Electrification, by M. H. Hobbs
3. Control of Synchronous Motors, by D. R. Shoults
4. Artificial Lighting Application in the Paper Mill, by R. G. Morison
5. Proposed Standard Power Plant Report
6. Comparison Power Plant Report

2:00 P.M. RESEARCH AND DEVELOPMENT DIVISION—PARLOR 1

Symposium—Lignin

Chairman—C. E. Curran

1. A Comparison of Four Methods for Determination of Lignin, by P. S. Billington, F. A. Simmonds, and P. K. Baird
2. Determination of Lignin, by H. F. Lewis and W. E. Koonce

3:30 P.M. TESTING DIVISION—PARLOR 1

Symposium—Dirt Measurement

Chairman—E. O. Reed

1. Dirt Content of Chips, by W. M. Osborne
2. Dirt Content of Pulp, by J. d'A. Clark
3. The Determination of the Foreign Particles Count in Paper, by C. E. Curran

Wednesday, February 15

9:30 A.M. ENGINEERING DIVISION—PARLOR C

Symposium—Power Supply

Chairmen—Messrs. Bearce and Darling

1. Public Utility Supply, by J. F. Gaskill
2. Isolated Turbine Plants, by S. M. Green
3. Cooperative Energy Generation, by H. A. Lynette
4. Surplus Power for Industrial Plants, by A. G. Christie

9:30 A.M. TESTING DIVISION—PARLOR 1

Symposium—Chemical Evaluation of Wood Pulp

Chairmen—Messrs. Reed and Cable

1. Alpha Cellulose in Pulp, by W. R. Willets
2. Sampling and Testing Woodpulp for Moisture, by H. K. Benson
3. Copper Number of Pulp, by N. L. Nourse (By title)
4. Permanganate Number of Pulp, by R. H. Wiles
5. Determination of the One Per Cent Caustic Soda Solubility of Pulp, by P. S. Billington
6. Ash in Pulp, by H. W. Laymon (By title)
7. The Use of 40-60 Mesh Sawdust in the Chemical Evaluation of Pulpwood, by B. E. Lauer and M. A. Youtz

9:30 A.M. OPERATING DIVISION—FOYER BANQUET HALL

Symposium—Paper Manufacture

Chairmen—Messrs. Clark, Curran and Smith

1. Aluminate Size, by J. J. Healy Jr. and C. P. Dyer
2. The Use of Zinc Pigments in the Paper Industry, by H. M. Cyr

Chairmen—F. C. Clark and Lyman Smith

3. Drying Rate for Kraft Paper, by A. E. Montgomery (By title)
4. The McDonnell Fourdrinier, by Frank M. McDonnell
5. News Print Paper Machine Water Removal Factors, by G. D. Bearce
6. Problems in the Operation of a Yankee Machine, by William Fogarty (By title)
7. White Water Eccentricities, by C. M. Baker
8. Rubber Covered Rolls
9. Cleaning Pulp and Paper Stale, by Phillip Dermot

2:00 P.M. MANAGEMENT DIVISION—PARLOR C

Symposium—Management Methods

Chairman—W. R. Maull

1. Application of Technical Control to Production, by W. M. Shoemaker and J. E. Plumstead
2. Round Table Discussion of Management Methods
3. Special paper, Technical Associations and the Patent Situation, by C. W. Rivise

2:00 P.M. RAW MATERIALS DIVISION AND TESTING DIVISION—PARLOR 1

Symposium—Physical Evolution of Pulp

Chairmen—Messrs. Parsons, Reed and Miss Helen Kiely

1. The Use of Rubber Covered Rods in the Strength Testing of Wood Pulp, by F. C. Peterson
2. A Comparison Between Flint Pebbles and Porcelain Balls as a Means of Hydrating in the Pebble Mill Test—II, by F. C. Peterson
3. The Effect of Pebble Weight Variation in the Strength Testing of Wood Pulp, by F. C. Peterson
4. Comparison of Sheet Testing Machines, by P. K. Baird and R. H. Doughty
5. Screen Fractionation, by H. W. Johnston
6. Round Table Discussion of Pulp Classification and Specifications, Special Report, No. 183 led by Helen U. Kiely

2:00 P.M. OPERATING DIVISION AND ENGINEERING DIVISION—EXHIBIT ROOM 2

Symposium—Alkaline Pulp and Waste Heat Recovery

Chairmen—Messrs. Clark and Murdoch

1. An Improved Method of Analysis of Spent Black Liquors from Soda and Sulphate Process, by M. A. Heath
2. Modern Boiler Practice as Applied to a Kraft Waste Heat Unit, by L. F. Bunde (By title)

Thursday, February 16

9:30 A.M. OPERATING DIVISION AND ENGINEERING DIVISION—PARLOR 1

Symposium—Acid Pulping and Heat Exchangers

Chairmen—Messrs. Clark, Bearce and Edwardes

1. The Morterud Sulphite Circulation System, by H. S. Kiaer
2. The F. M. P. Method of Digester Circulation, by A. Christensen
3. Automatic Digester Control, by James Rogers II
4. Analysis of the Paulson Process of Evaporation and Combustion of Sulphite Waste Liquor, by H. S. Kimball

9:30 A.M. RESEARCH AND DEVELOPMENT DIVISION—FOYER BANQUET HALL

Symposium—Fiber Processing and Properties

Chairman—C. E. Curran

1. The Sodium Hydrosulphite Rag Cooking Process, by S. Lenher
2. Degradation of Rag Stocks with Alkaline Cooking at Elevated Temperatures, by H. F. Lewis
3. Relative Stability of Bleached Rag Half Stocks and Bleach Purified Sulphite Pulps to Degradation by Calcium Hypochlorite Solutions, by H. F. Lewis and E. R. Laughlin

(Continued on page 52)

World's Largest Board Mill Just Installed

The Thames Board Mills, Ltd., Purfleet, London, England, have just installed the largest board machine in the world. Their engineers made a careful study of American board machines before placing this order. They then decided during 1931 to place this order for the forming end of this machine with Beloit Iron Works and gave careful study to Beloit machines that have run over 400 feet per minute on solid container.

Figured to Capacity of 500 Feet

The forming end of this machine was built by Beloit to run 400 feet but everything figured to a capacity of 500 feet, as this machine is proportioned in every way capable of producing 500 feet per minute. The cylinder molds are eight in number, 48 inch diameter, 185 inch face. Everything about this forming section is of new pattern, new construction, including the vats, molds, run of the felt, arrangement of the suction rolls and presses.

Molds Built Very Special

The molds are built very special. The rods across the mold are of special shape to give the necessary strength and at the same time only give the circle equal to a 1/8-inch rod where the wire touches the surface, whereas in ordinary molds the rods are from 5/16-inch to 3/8-inch in diameter where the wire touches the surface, also these rods are dovetailed into the cylinder mold spiders so that they are very rigid and strong, with no chance of any vibration.

Vat Parts of Acid Resisting Metal

The mold itself is built with a heavy semi-steel center covered with acid-resisting metal. The spiders and all of the vat parts are also built of acid-resisting metal. The entire mold is built very rigid and very strong, suitable for high speed, and the shape of the rods is such that the water that passes through the wire faces on the mold should throw toward the inside of the mold instead of by centrifugal force toward the outside. These are entirely new features embodied in cylinder molds, but are intended particularly for a very large machine at high speed.

Avoid Wasting Space

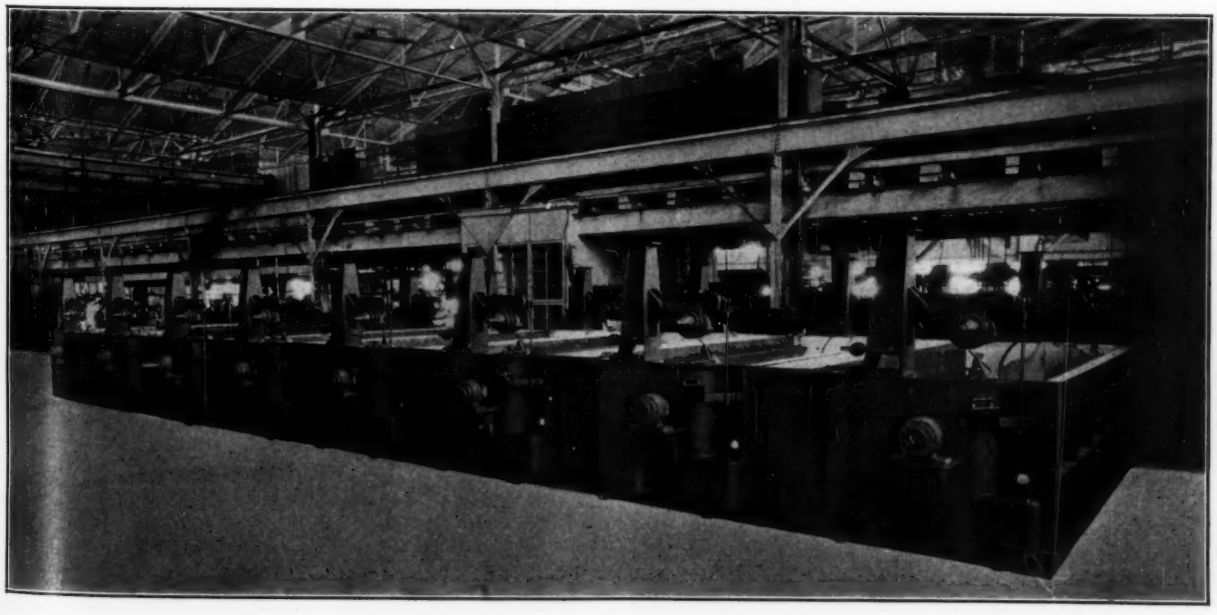
The bodies of the vats are cast iron, specially trussed so that they are very strong and yet are built compact so as to avoid wasting space. The bottom of the vats is of cypress, the inside partitions and making boards are of acid-resisting metal, also the breast leading around the mold is of the same metal, all very highly finished so that there will be no possibility of the material sticking to these metal surfaces, no danger of slime or lumps from this cource.

Vats Embody New Idea

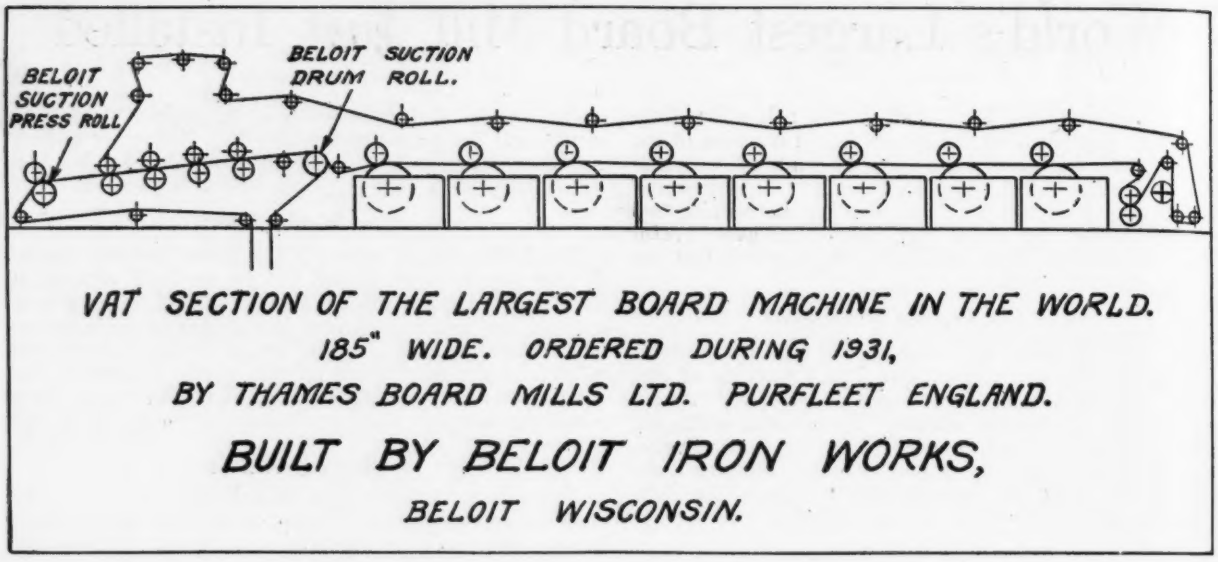
The vats are entirely new, embodying a new idea, the ends project so that the cylinder mold will rest in a large lake of water with an overflow on each end. This is also of acid-resisting metal and arranged so that the water in the mold can be kept to an exact level, regardless of the speed of the mold, also that there will be no interference with the water running from the mold to the overflow as the overflows are directly in the pond of water, both back and front of machine. The molds are supported in anti-friction bearings, as are the couch rolls and all of the carrying rolls on the wet end.

Inlets to Vats Very Special

The fan pumps are connected to the bottom of the vat with pipes leading from two points to assist in keeping the water perfectly level inside the vats. The inlets to the vats are very special, entering at more than one point, with special distributors, the stock passing through acid-resisting metal grids, which distribute the stock and should give as level a sheet coming to the cylinder molds, even with the great width and the high speed, as can be attained on



VAT ON FLOOR OF THE BELOIT IRON WORKS


BELOIT SUCTION PRESS ROLL
BELOIT SUCTION DRUM ROLL.
VAT SECTION OF THE LARGEST BOARD MACHINE IN THE WORLD.
185" WIDE. ORDERED DURING 1931,
BY THAMES BOARD MILLS LTD. PURFLEET ENGLAND.
BUILT BY BELOIT IRON WORKS,
BELOIT WISCONSIN.

a Fourdrinier machine. The object is to get a perfectly level sheet at high speed with a proper distribution of the stock that should give a very high test.

The approximate weight of the vat with its mold is twenty tons.

Couch Rolls of Rubber

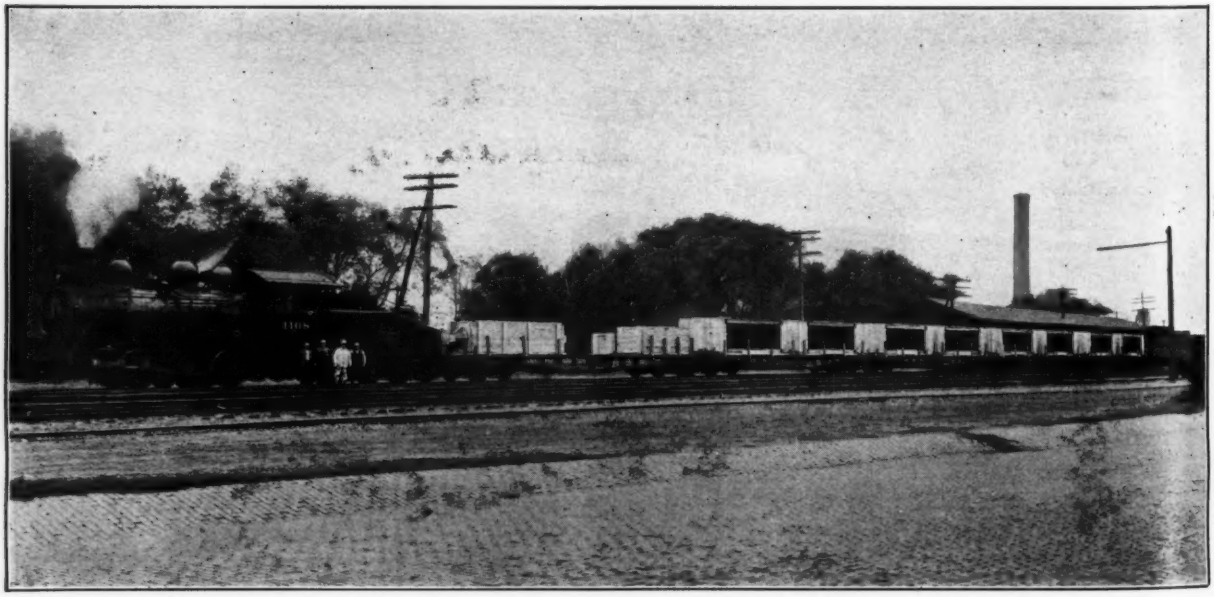
The couch rolls will be of rubber, supported in anti-friction bearings. The board is picked from the cylinder molds by the top felt, which runs an entirely different direction from all cylinder machines that have been built up to the time this machine was ordered, as the felt, instead of running away from the driers, will run toward the driers. After leaving the eighth mold the board will be met with a short bottom felt which will carry over a suction drum roll. This suction drum roll is prepared similar to a suction couch roll, except that the capacity is very large, as there is a great amount of water to be removed at this point. This is with the thought of giving bulk and finish to the sheet.

Unique Feature of Machine

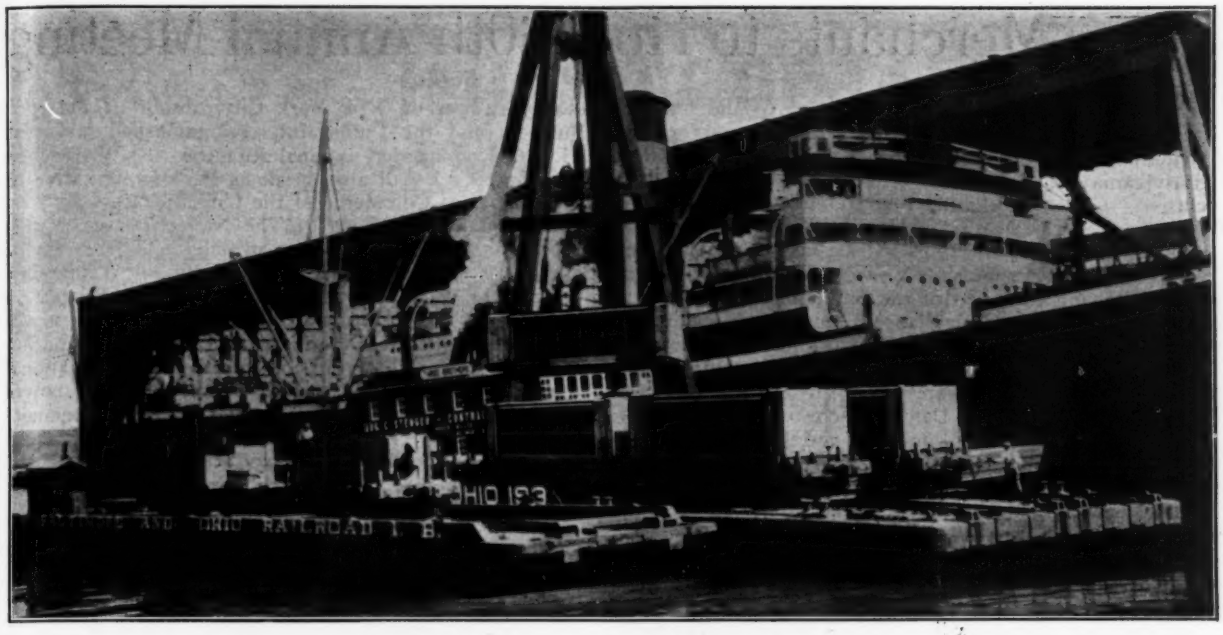
On most other machines built today there is some kind of pressure rolls brought to bear on the paper after it is joined by the second felt; it will either pass between soft rubber rolls or some kind of rolls for compressing the sheet in its soft mushy state; whereas in the case of the Thames machine it passes over a large diameter Beloit suction drum roll with a very wide box so as to give the sheet at high speed a longer time over the suction area to remove the water without compressing the sheet at this point.

Equipped with Four Pairs of Primary Press Rolls

For container liner the paper will pass directly over a suction press roll, then through a plain press and a finish-



TRAIN LOAD OF MACHINERY LEAVING BELOIT IRON WORKS



LOADING MACHINERY ON BOARD SHIP AT BALTIMORE

ing press. This machine is also equipped with four pairs of primary press rolls so that when solid boards are desired instead of bulk the primary press rolls will be used, the board passing between four pairs of primary press rolls, then over a suction press, a plain press and a finishing press, but for container or for all grades where bulk is desired the primary press rolls need not be used. The machine is intended for any grade of board, especially where high test, formation and finish are factors.

Superintendents To Meet at Green Bay

A tentative program for the Fourteenth Annual Convention of the American Pulp and Paper Mill Superintendents Association has been arranged by the committee in charge. This convention will be held June 8, 9 and 10 at Green Bay, Wis.

Frank J. Timmerman is general chairman of the convention committee and he has presented to President William H. Brydges and the other executives of the association an outline of the program which provides for two days of business sessions. The first day will be devoted entirely to the presentation of papers and the second day will be devoted exclusively to a general discussion of the papers that were presented the day before.

There will be no business session on Saturday, this last day of the Convention being set aside for visits to pulp and paper mills in the vicinity.

Among the subjects to be covered by papers at the Convention are the following:

"Nip Pressures With Rubber Covered Suction Rolls." "Lubrication of Ball and Roller Bearings." "Acid Circulation." "Pitch." "White Water Utilization." Micarta Bearings." "Zinc Pigments in the Paper Industry." "Lubrication of Reduction Gears." "Chromium in the Pulp and Paper Industry." "Unemployment Insurance." "New Steel Compositions and their Relation To the Paper Industry." "New Development in Paper Machinery." "Safety." "New Methods of Cooking Sulphite." "New Uses and Future Uses of Paper."

A golf tournament will be staged on June 7 for the early arrivals and on the evening of June 7 there will be a stag banquet at the Beaumont Hotel, followed by initiation ceremonies conducted by the Royal Order of Chinese Paper Makers with Fred C. Boyce in the roll of Confucius.

General Chairman Frank J. Timmerman, Northern Paper Mills.

A. W. Bouffard of Green Bay is Secretary of the General Convention Committee.

The Chairmen of the Subcommittees follow: Finance—Mat. Ketter, Hoberg Paper and Fibre Company. Arrangements—H. W. Sherman, Northern Paper Mills. Entertainment—B. D. Bradley, Fort Howard Paper Company. Registration—A. K. McNaughton, Northern Paper Mills. Transportation—H. D. Banta, Hoberg Paper and Fibre Company. Women's Entertainment—Mrs. A. E. Cofrin, Green Bay. Reception—R. Radsch, Appleton Machinery Company. Mill Visits—Edw. Den Dooven, Hoberg Paper and Fibre Company. Publicity—Joe Hodgins, *The Paper Mill and Wood Pulp News.*

Boston Paper Market Fairly Active

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 30, 1933—Slightly more activity developed in some directions in the paper market during the week, although several jobbers reported a continued quiet. Difficulty in collections is one of the trials of dealers. Fine paper is holding its own. A number of lines were in more demand from printers, including some for making folders and for other advertising purposes. Bonds and ledgers were in moderate call. General lines of wrapping paper were somewhat spotty. No. 2 kraft moved at .02½ in rolls in carload lots, and in less than carload lots, f. o. b. Boston. Specialties were in average demand.

Box board was in fair demand generally and in considerable demand for making cartons for jig-saw puzzles. In some cases manufacturers are making the puzzles. Paper stock continued sluggish as a whole, although there was a little business in specialty lines. Greater interest was shown in corrugated boards, with six carloads moving at .17½ among the sales.

Paper Merchants to Hold 30th Annual Meeting

The National Paper Trade Association of the United States has practically completed its arrangements for the Thirtieth Annual Convention, which will be held at the Pennsylvania Hotel, New York, from February 13 to 15, inclusive. Certain preliminary conferences and committee meetings will be held on February 12.

Several commodity meetings will be held which will be open to the entire membership. They will be presided over by the following chairmen of the commodity committees: H. A. Newton, American Paper Company, Milwaukee, Wis., Kraft Committee; L. H. Young, John S. Cheever Company, Boston, Mass., Gummed Tape Committee; F. Bendel Tracy, Fort Hill Paper Company, Boston, Mass., Tissue Committee; J. S. Danehy, Schwarz Paper Company, Chicago, Ill.; Bag Committee; and J. T. Daily, Pilcher-Hamilton-Daily Company, Chicago, Ill., Twine Committee.

These meetings have to do with the promotion of the mill policies program sponsored by the association and the general betterment of distributing conditions in the various commodity lines. Several conferences with manufacturing groups have also been arranged by the committees.

Monday, February 13, will, as usual, be devoted to preliminary work and committee meetings, including the sessions of the Fine Paper and Wrapping Paper Executive Committees, and the annual meeting of the Board of Directors. The latter will be called on Monday evening.

Survey Committee to Report

Tuesday morning's session, presided over by Vice-President S. L. Wellhouse, of Atlanta, will cover matters of general interest to both divisions, including the report of the Survey Committee and the presentation of the subject of Budgetary Expense Control. R. M. Beckwith, Minneapolis Paper Company, will discuss this topic from the viewpoint of practical experience.

The guest speaker at this session will be Dr. Paul H. Nystrom, professor of marketing, of the Columbia University School of Business, who will analyze present conditions and tendencies with respect to cost of distribution. The meeting will then develop into an "Open Forum" which has become a feature of these conventions on the question, "What are you going to do about it?" referring, of course, to executive policies and methods of meeting current and prospective conditions.

The Fine Paper session, Tuesday afternoon, February 14, will have Vice-President A. W. Leslie, of Minneapolis, in the chair, and will include reports on cost survey, direct selling, job lots and seconds, and other problems of vital interest. Speakers will be J. H. Bailey, of the Business Research Corporation, Chicago; and H. H. Heimann, executive manager of the National Association of Credit Men. The latter will discuss the business outlook.

In the evening of Tuesday will be held the annual Round Table Dinner of the association executives with the presidents and secretaries of the nineteen constituent local associations. This is the occasion for interchange of experience and intimate discussion of the work of the national and local organizations.

Arrangements for General Meeting

The general meeting of the whole association will be held Wednesday morning, February 15, with President J. F. Miller, Detroit, Mich., in the chair. Reports of the board of directors, treasurer and executive secretary, will be presented and acted on. The feature of this meeting will be an address by Benjamin A. Javits, a prominent corporation lawyer of New York City, author of the book "Business and the Public Interest" published last year which has commanded national attention. R. W. Belcher, New York City, will also speak as the representative of the Chamber of Commerce of the United States.

The invitation luncheon of The National Paper Trade Association, which has become an outstanding feature of Paper Week will be held at 1:00 o'clock on Wednesday, February 15. The association is to be congratulated on arranging with the Hon. Carroll L. Beedy, Congressman from Maine, to address the merchants and their manufacturing guests on this occasion on the topic "National Issues." Mr. Beedy is a speaker of extraordinary power and acumen, whose address will make the affair a memorable one.

Complete Preliminary Schedule

Following is the complete preliminary schedule which may be subject to some alteration in the final program:

Monday, February 13

9:00 A. M.—Kraft Meeting
10:30 A. M.—Gummed Tape Meeting
11:30 A. M.—Tissue Meeting.
1:00 P. M.—Luncheon—Wrapping Division Credit Committee
2:00 P. M.—Bag Meeting
3:00 P. M.—Twine Meeting
4:00 P. M.—Executive and Administrative Committees, Fine Division
4:00 P. M.—Executive Committee, Wrapping Division
6:00 P. M.—Conference Dinner, Tissue Committee with Manufacturers of Interfolded Toilet and Towels.
8:30 P. M.—Board of Directors.

Tuesday, February 14

9:30 A. M.—Wrapping Paper Division
2:30 P. M.—Fine Paper Division
7:00 P. M.—Round Table Conference Dinner. Executive officers with Presidents and Secretaries of Local Associations.

Wednesday, February 15

9:30 A. M.—General Meeting of the Association
1:00 P. M.—Invitation Luncheon.

Bids and Awards For Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 1, 1933.—The Government Printing Office has received the following bids for 2,850 pounds of white offset paper; Reese & Reese, Inc., at 5.39 cents per pound; Whitaker Paper Company, 6. 5 cents; American Writing Paper Company, 6 cents; Barton, Duer & Koch Paper Company, 5.5 cents; Aetna Paper Company, 5.25 cents; R. P. Andrews Paper Company, 5.45 cents; Mathers-Lamm Paper Company, 6.955 cents; Cauthorne Paper Company, 5.44 cents.

The Aetna Paper Company has been awarded the contract for furnishing the Government Printing Office with 5,000 pounds (31,000 sheets) 21x32½, 50 per cent rag blue ledger paper at 9.72 cents per pound.

Reese & Reese, Inc., will furnish 4,560 pounds (12,000 sheets) of 19x24, 390 lbs., heavy white blotting paper at 12.68 cents per pound.

The Cauthorne Paper Company will furnish 3,000 pounds of No. 1 gummed kraft paper in 24 inch rolls at 5 cents per pound. Bids for all these items were received on January 20.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JANUARY 28, 1933

CIGARETTE PAPER

Standard Products Corp., Lafayette, Havre, 29 cs.

WALL PAPER

J. E. Bernard & Co., Stuttgart, Bremen, 32 bls., 5 cs.; E. S. Farley, Stuttgart, Bremen, 1 ble., 1 cs.; Lexington Wallpaper Supply Co., Pennland, Antwerp, 2 bls.; ———, A. Ballin, Hamburg, 7 cs.; F. J. Emmerich, A. Ballin, Hamburg, 8 bls., 1 cs.; R. F. Downing & Co., A. Ballin, Hamburg, 1 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Franconia, Southampton, 2 bls., 1 cs.

PAINTED PAPER

Leno Wallpaper Corp., E. Francqui, Antwerp, 2 pkgs.

NEWS PRINT

Perkins Goodwin & Co., Stuttgart, Bremen, 59 rolls; Jay Madden Corp., Stuttgart, Bremen, 468 rolls; Gilman Paper Co., Ragnhildsholm, Norrkoping, 440 rolls; Brooklyn Times, Ragnhildsholm, Norrkoping, 142 rolls; ———, Stavangerfjord, Oslo, 428 rolls; Perkins Goodwin & Co., A. Ballin, Hamburg, 417 rolls; Irving Trust Co., A. Balfin, Hamburg, 285 rolls.

PRINTING PAPER

International F'd'g Co., E. Francqui, Antwerp, 1 cs.; C. Steiner, Stuttgart, Bremen, 8 cs.; Japan Paper Co., Franconia, Southampton, 1 cs.; Rohner Gehrig & Co., A. Ballin, Hamburg, 3 bls.

WRAPPING PAPER

Standard Products Corp., Pennland, Antwerp, 6 rolls, 1 cs.; D. E. Bordner, A. Ballin, Hamburg, 3 bls.

PACKING PAPER

J. Marks, Singapore Maru, Hamburg, 2 cs.

FILTER MASS

Henschel Naeve & Co., A. Ballin, Hamburg, 10 bls.

FILTER PAPER

H. Reeve Angel & Co. Inc., Berengaria, Southampton, 15 cs.; H. Reeve Angel & Co. Inc., Franconia, Southampton, 8 cs.; A. Giese & Son, A. Ballin, Hamburg, 10 cs., 5 bls.

DRAWING PAPER

Keuffel & Esser Co., Singapore Maru, Hamburg, 15 cs., 33 rolls.

BRISTOL BOARDS

Keuffel & Esser Co., Franconia, Southampton, 3 cs.

SURFACE COATED PAPER

Globe Shipping Co., Stuttgart, Bremen, 4 cs.; Globe Shipping Co., A. Ballin, Hamburg, 1 cs.; Gevaert Co. of America, Pennland, Antwerp, 57 cs.

METAL COATED PAPER

K. Pauli Co., A. Ballin, Hamburg, 36 cs.; Globe Shipping Co., A. Ballin, Hamburg, 11 cs.

COATED PAPER

Chas. Happel, A. Ballin, Hamburg, 26 cs.

LITMUS PAPER

Phoenix Shipping Co., A. Ballin, Hamburg, 1 cs.

TRANSFER PAPER

Fuchs & Lang Manfg Co., Singapore Maru, Hamburg, 6 cs.

DECALCOMANIA PAPER

Sellers Transportation Co., A. Ballin, Hamburg, 6 cs.

COLORED PAPER

F. Murray Hill Co., A. Ballin, Hamburg, 2 cs.

FANCY PAPER

Meadows Wye & Co., Lafayette, Havre, 1 cs.

WRITING PAPER

G. W. Sheldon & Co., E. Francqui, Antwerp, 4 cs.; G. W. Sheldon & Co., Pipestone County, Calais, 1 cs.

ENVELOPES

Beckhard Simfred Co., A. Ballin, Hamburg, 8 cs.

COVER PAPER

International F'd'g Co., A. Ballin, Hamburg, 12 cs.

PAPER BAGS

J. B. Mast & Co., Pennland, Antwerp, 6 cs.

CARD BOARD

G. M. Thurnauer, Pennland, Antwerp, 12 cs.; Gevaert Co. of America, Pennland, Antwerp, 1 cs.; Framerican Importing Co., Exeter, Marseilles, 4 cs.; Coty Processing Co., Lafayette, Havre, 21 cs.; American Express Co., A. Ballin, Hamburg, 10 cs.

PAPER BOARD

Colmar Paper Corp., Pennland, Antwerp, 14 cs.

MISCELLANEOUS PAPER

Japan Paper Co., Augustus, Genoa, 8 cs.; Wilkinson Grey & Co., Pennland, Antwerp, 2 cs.; Hudson F'd'g & Shipping Co., Lafayette, Havre, 1 cs.; Keller Dorian Paper Co., Lafayette, Havre, 1 cs.; Wedeman Godknecht & Lally, A. Ballin, Hamburg, 22 cs.; Phoenix Shipping Co., A. Ballin, Hamburg, 1 cs.

RAGS, BAGGINGS, ETC.

M. Snedeker Corp., Transylvania, Glasgow, 142 bls. paper stock; ———, Singapore Maru, Hamburg, 50 bls. rags; E. J. Keller Co. Inc., Pipestone County, ———, 115 bls. rags; D. M. Hicks, Inc., Pipestone County, Calais, 96 bls. flax waste; Darmstadt Scott & Courtney, Hoxie, Dundee, 26 bls. paper stock.

HIDE GLUE

———, Stuttgart, Bremen, 200 bags; ———, A. Ballin, Hamburg, 100 bags.

OLD ROPE

National City Bank, A. Merchant, London, 111 coils; E. J. Keller Co., Inc., Exeter, ———, 344 coils.

CASEIN

———, W. World, B. Ayres, 100 bags; D. C. Andrews & Co., A. Ballin, Hamburg, 60 bags.

WOOD PULP

Bulkley Dunton & Co., Simon von Utrecht, ———, 1375 bls. wood pulp, 279 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 8600 bls. sulphite, 1595 tons; ———, Simon von Utrecht, Hernosand, 1200 bls. sulphate, 200 tons; Stora Kopparberg Corp., Ragnhildsholm, Skulskarf, 1375 bls. wood pulp; Price & Pierce, Ltd., Ragnhildsholm, Orviken, 216 bls. chemical pulp; Johaneson Wales & Sparre, Inc., Ragnhildsholm, Gothenburg, 256 bls. chemical pulp; Gottesman & Co. Inc., Ragnhildsholm, Gothenburg, 3000 bls. sulphate; J. Andersen & Co., Stavangerfjord, Oslo, 500 bls. sulphite; E. M. Sergeant & Co., Stavangerfjord, Oslo, 300 bls. chemical pulp; Castle & Overton, Inc., A. Ballin, Hamburg, 1120 bls. wood pulp, 224 tons.

BOSTON IMPORTS

WEEK ENDING JANUARY 28, 1933

E. J. Keller Co. Inc., Uruguayo, ———, 336 bls. wood pulp; E. J. Keller Co. Inc., Clairton, ———, 70 bls. bagging; Gottesman & Co. Inc., Eknaren, Sweden, 3030 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JANUARY 28, 1933

Castle & Overton, Inc., Pipestone County, Calais, 118 bls. rags; ———, Hoxie, Leith, 82 coils old rope; ———, Hoxie, London, 63 coils old rope; Perkins Goodwin & Co., Hoxie, Hamburg, 60 rolls news print; F. B. Vandegrift & Co., Hoxie, Hamburg, 2 cs. drawing paper; E. J. Keller Co. Inc., Hoxie, ———, 366 bls. wood pulp, 56 tons; 1st Natl. Bank of Boston, Hoxie, Hull, 50 coils old rope; Union Waste Co., Hoxie, Hull, 58 coils old rope; ———, Hoxie, Bremen, 85 bls. rags; Castle & Overton, Inc., Hoxie, Bremen, 22 bls. rags; International Accep. Bank, Hoxie, Hamburg, 50 bls. rags; E. J. Keller Co. Inc., Exilona, ———, 80 bls. rags; Gottesman & Co. Inc., Ragnhildsholm, Sweden, 1980 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING JANUARY 28, 1933

Bulkley Dunton & Co., Simon von Utrecht, ———, 750 bls. wood pulp, 152 tons; J. Andersen & Co., Simon von Utrecht, Soderhamn, 2550 bls. sulphate, 518 tons; ———, Simon von Utrecht, Hernosand, 3000 bls. sulphate, 500 tons; Mead Sales Co., Simon von Utrecht, Sundsvall, 4296 bls. sulphite, 727 tons, 150 bls. mechanical, 25 tons; Johaneson Wales & Sparre, Inc., Simon von Utrecht, Sundsvall, 2400 bls. sulphite, 487 tons; Gottesman & Co. Inc., Eknaren, Sweden, 2000 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING JANUARY 28, 1933

Gottesman & Co. Inc., Eknaren, Sweden, 2320 bls. wood pulp.

GALVESTON IMPORTS

WEEK ENDING JANUARY 28, 1933

———, Kirishima Maru, Kobe, 200 bls. bagging.

Paper Affiliates Co. Organized

Edwin G. Straus has organized a new concern known as Paper Affiliates Company, Inc., with offices located at 331 Fourth Avenue, New York. This company will market specialty papers adapted to packaging, printing and technical fields. Some of the items included in the line will be foil papers, pyroxolin coated stocks, gloss finish papers, gummed transparent cellulose, and special adhesive materials.

Wheelwright Receivership Decision

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., January 23, 1933—In the Equity Division of the Superior Court of Suffolk County, Wednesday, Judge Gray reserved any decision for thirty days on the continuation of the receivership of the Geo. W. Wheelwright Paper Company, Leominster, Mass., and may, at the end of thirty days report to reserve the right to make a decision at the close of a still later period. Only one creditor, the North American Coal Company, appeared in opposition to a continuation of the receivership, but was over-ruled by the Court. It was arranged to raise more capital. The receivers were authorized to discontinue the operation of the Hardwick Mill, but the plant at Leominster will continue to operate. The receivers are Carl F. Woods, George Albert and George W. Wheelwright. About twenty were present, including a number from Leominster.

TAPPI CONVENTION PROGRAM

(Continued from page 46)

4. Sorption of Water by Paper Making Materials
5. A Survey of the Drying of Paper and Cellulosic Paper Making Materials, by F. A. Simmonds

9:30 A.M. CONVERTING AND CONSUMING DIVISION, TESTING DIVISION—PARLOR C

Symposium—Graphic Arts

Chairmen—Messrs. Nickerson, Reed and Clarkson

1. The Bekk Smoothness Tester as an Aid in Studying the Printing Quality of Paper, by B. L. Wehmhoff, R. H. Simmons and D. H. Boyce
2. A Simple and Reliable Photoelectric Tester, by M. N. Davis
3. A Round Table Discussion of Paper, Ink and Printing Problems

1:00 P.M. ANNUAL LUNCHEON AND BUSINESS MEETING—BANQUET HALL

Chairman—President Allen Abrams

Report of Nominating Committee

Election of Officers

Other Business

ADDRESS—Technology and Social Progress, by Walter Rautenstrauch, Professor of Industrial Engineering, Columbia University

NOTE: Dr. Rautenstrauch has been intimately identified with Technocracy, the engineering group that has been making the energy survey of North America. The Technical Association is fortunate to be able to hear this outstanding authority on a subject that is foremost in the minds of the American public. An opportunity will be provided for a general discussion of this subject following Dr. Rautenstrauch's address.

Puzzle Craze Keeps Board Plant Busy

[FROM OUR REGULAR CORRESPONDENT]

LOCKPORT, N. Y., January 30, 1933.—A large fiber board plant here has started production of puzzles as a sideline and the result has been beyond expectations. The adoption of the puzzle fad has resulted in operation of the plant day and night and about 75 hands are being given steady employment. The new line was introduced as an experiment before the holidays and the increasing volume of orders now necessitates the turning out of about 16,000 puzzles every twenty-four hours.

WOOD PULP
AGENTS

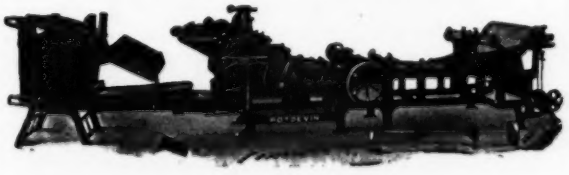
PRICE & PIERCE, Ltd.,

60 EAST 42nd ST.
NEW YORK

CAMERON MACHINE COMPANY
61 Poplar St. Brooklyn, N. Y.

NEW **POTDEVIN** SACK

CEMENT BAG MACHINE



3 Sizes—NAIL—FLOOR—CEMENT

2-COLOR RUBBER TYPE PRINTING

POTDEVIN MACHINE CO.

1223 38th Street, Dept. 4, Brooklyn, N. Y., U. S. A.

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SHELL BURRS

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STANDARD SIZES SUITED TO
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WARREN IMPROVED CALENDER
With flexible blades, Universal Adjustment and Control, Patented — DOCTORS

WARREN IMPROVED
DOUBLE DRUM— — WINDER

BALL HYDRANT
for Stock Circulating Systems — VALVES

TI MACHINE
Semi-Steel Sectional
3-4-5-6-7 Cuts per Inch — BURRS

AND OTHER PAPER MILL MACHINERY

MANUFACTURED BY
TICONDEROGA MACHINE WORKS
TICONDEROGA, N. Y.

SEND FOR BULLETINS—ASK FOR PRICES

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, February 1, 1933

Trading in the local paper market was only moderately active during the past week. Demand for the various standard grades of paper is mostly along routine lines. There are a number of inquiries around for future account and the outlook for the future is fairly promising. No radical price changes were reported.

The news print paper market continues listless. Production in the United States and Canadian mills is being maintained in sufficient volume to take care of current requirements. Stocks at the mills are not excessive. The price situation is unsatisfactory and efforts to stabilize the industry are proceeding very slowly.

Demand for paper board is fairly persistent. Box board operations are expanding gradually. Prices remain steady and unchanged. The fine paper market continues to mark time. Tissues are slightly firmer. The coarse paper market is spotty, although the recently advanced quotations on kraft wrapping paper are holding.

Mechanical Pulp

The ground wood pulp market is in a sound statistical position. Production of mechanical pulp, both at home and abroad, is practically keyed to consumption and accumulations are not excessive. Prices are generally holding to previously quoted levels, without difficulty, and reports of shading are infrequent.

Chemical Pulp

Steadiness prevails in the chemical pulp market, although business continues quiet. Prices are holding to schedule, in most instances. Imported bleached sulphite is still quoted at from $1.80 to $2.25, on dock, Atlantic ports; while domestic and Canadian bleached sulphite is selling at from $1.75 to $3.75, f.o.b. pulp mill.

Old Rope and Bagging

The old rope market continues dull. Demand for both domestic and foreign old manila rope is light. Small mixed rope is only moving slowly. Old rope prices are nominal. The bagging market is somewhat firmer. Scrap bagging and gunny bagging are fairly active. Roofing bagging is in seasonal request. Prices are steadier.

Rags

Some signs of improvement are noticed in the domestic rag market. Demand for new cotton rags is slightly better, especially for white shirt cuttings. Roofing grades are fairly steady. The imported rag market is easier. New dark cuttings are now quoted at from $1.30 to $1.40; new mixed cuttings at from $1.50 to $1.60 and unbleached cuttings at from $4.50 to $5.00.

Waste Paper

The paper stock market is marking time. While board mill demand for the lower grades is rather light at present, operations are being speeded up and demand should become more lively in the near future. Offerings of the lower grades are still limited and prices remain unchanged. The better grades of paper stock are holding up well and prices are well maintained.

Twine

Conditions in the twine market are fairly satisfactory. Demand for the various grades is slightly better now that the holidays and the inventory period have passed. Inquiries for future account are fairly numerous. Prices are generally well maintained despite keen competition for desirable orders.

Large Pulpwood Cargoes from Russia

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., January 30, 1933.—Plans are under way for increasing storage facilities at the local port terminal because of the large shipments of foreign pulpwood being handled. The port revenue on pulpwood cargoes is about fifteen cents a ton after two weeks of free storage and amounts to several thousand dollars monthly.

This revenue will be increased by several vessels which are scheduled to arrive here within the next few days with cargoes of pulpwood from Russia and it is estimated that about 7,000 tons will be delivered here. In order to prepare for these arrivals the pulpwood unloaded from the last two vessels has been piled several tiers high and port officials claim that they are being handicapped because of the congested condition.

Indications are that the foreign importations received here will far surpass any previous year in regards to tonnage and it is claimed that the need of more storage space is imperative. It has not been necessary, however, to turn any ship away from the port so far. Expansion of the storage facilities will result in a large increase in the amount of tonnage handled.

Lower News Print Freight Rates Asked

WATERTOWN, N. Y., January 21, 1933—A brief has been filed by the St. Regis Paper Company with the Interstate Commerce Commission in which a lower basis of freight rates on news print paper is sought or else the concern will be compelled to resort to water transportation on a more extensive scale. The brief brings out that water shipments have already been resorted to in order to obtain relief and while the company prefers railroad transportation it has been found necessary to divert much valuable traffic over the former route. It also points out that the New York Central Railroad upon noticing the water movements had requested the Commission for permission to establish lower rates on news print from Northern New York to Chicago without maintaining them at intermediate points but the application was denied. The statement concludes by requesting the Commission to give the company promptly the relief to which it has long been entitled.

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THE N. P. BOWSHER CO.
South Bend, Ind.
Established 1882

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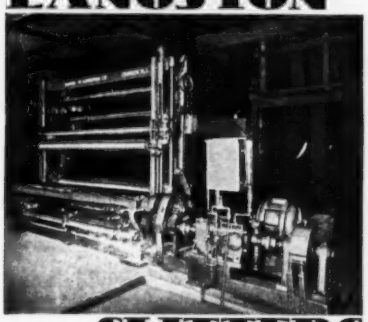

The heavy-duty Langston Slitter can be had in any width, to wind any diameter. Use it as a winder or as a rewinder. Speed up to 3000 feet per minute. Makes rolls of uniform density, square-edged. Langston's Shear-Cut makes no dust—the paper is *clean-cut*, not ground apart. A catalog is yours for the asking.

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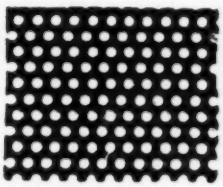
For Pulp and Paper Mills



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SATIN WHITE
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PAPER MAKERS CHEMICAL CORPORATION
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PLANTS IN ALL LARGE PAPER MAKING AREAS

GIANT

RAGS — BURLAP
BAGGING — ROPE
JUTE BUTTS, MAGAZINES, CATALOGS
OLD PAPERS, THREAD WASTE AND
ALL GRADES OF RAGS
CUT QUICKLY AND EFFICIENTLY
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GIANT
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This is the GIANT 2A CUTTER WITH A CAPACITY OF 3000 lbs. PER HOUR
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BLEACH TANK WHITE will actually protect metals from corrosion and make unnecessary the immediate replacement of metal parts which may be causing poor quality pulp. Acid and alkali proof.

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Consult us about our other Bituminous products to be used around the mill.

Send for free sample can—sufficient for coating good-size surface.

SLEIGHT BITUMINOUS PRODUCTS COMPANY
BALTIMORE, MARYLAND

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, February 1, 1933.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Some improvement was noticed in the bleaching powder market. The contract movement was fairly good. Prices are holding to previously quoted levels. Bleaching powder is selling at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market is marking time. Domestic standard ground is still quoted at 7 cents and finely ground at 8 cents per pound. Argentine standard ground is selling at 8 cents and finely ground at 8½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is fairly persistent. Prices are holding to schedule. Solid caustic soda is quoted at from $2.55 to $2.60; while the flake and the ground are selling at from $2.95 to $3.00 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is displaying a fairly strong undertone. Prices generally remain unchanged. Imported china clay is quoted at from $10 to $15 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—Trading in the chlorine market is more active than of late. Contract shipments are moving regularly. Prices are steady and unchanged. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is moderately active. The grades of gum rosin used in the paper mills are quoted at from $3.60 to $4.00 per 280 pounds, in barrels, at works; while wood rosin is selling at $2.60 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Conditions in the salt cake market are fairly satisfactory. Salt cake is still quoted at from $13 to $14; chrome salt cake at from $12 to $13 per ton, in bulk, at works; while imported salt cake is selling at from $13 to $14 per ton, at dock.

SODA ASH.—The soda ash market was more buoyant during the week. Shipments against contract were fairly heavy. Prices remain unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.30; and in barrels, $1.43.

STARCH.—Steadiness prevailed in the starch market. Demand from the paper mills was fairly brisk. Prices are holding to schedule. Special paper making starch is quoted at $2.19 per 100 pounds, in bags; and at $2.46 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Paper mill demand for sulphate of alumina is fairly persistent. The contract movement is normal. Commercial grades are quoted at from $1.25 to $1.46; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Business in the talc market is rather quiet. Prices are holding to schedule. Domestic talc is still quoted at from $16 to $18 per ton, in bulk, at eastern mines; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Leggers	6.50	@	38.00
Bonds	4.50	@	53.25
Index	6.00	@	12.00
Writings—			
Extra Superfine	6.50	@	15.00
Superfine	6.25	@	14.75
Tub sized	4.50	@	7.00
Engine sized	4.00	@	5.00
Book, Cased—			
S. & S. C.	4.25	@	5.00
M. F.	3.75	@	4.25
Coated and Enamel	5.00	@	9.00
Lithograph	5.00	@	9.00
Tissues—Per Ream—			
White No. 1	.50	@	.70
White No. 2	.45	@	.60
Anti-Tarnish M. G. only	.65	@	.70
Colored	.70	@	.90
Kraft	.65	@	.70
Manila	.55	@	.60
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¼	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¼	@	—

(Delivered New York)

News, per ton—			
Roll, contract	45.00	@	—
Rolls, spot	45.00	@	—
Sheets	50.00	@	—
Side Runs	30.00	@	35.00
Kraft—			
No. 1 Domestic	4.50	@	4.75
No. 2 Domestic	2.75	@	3.00
Southern	2.50	@	2.75
Imported	2.75	@	3.50
Boards—per ton—			
News	30.00	@	32.50
Straw	29.50	@	31.50
Chip	27.50	@	30.00
Binders' Boards	62.00	@	70.00
Kraft Liner	40.00	@	45.00
Standard 85 Test			
Jute Liner	27.50	@	30.00
Sgl. Mla. Ll. Chip	37.50	@	40.00

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	18.00	@	20.00
Dry	19.00	@	21.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	14.00	@	22.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	1.80	@	2.25
Easy Bleaching	1.60	@	1.75
No. 1 strong unbleached	1.35	@	1.60
Mitscherlich unbleached	1.60	@	1.75
No. 2 strong unbleached	1.25	@	1.35
No. 1 Kraft	1.25	@	1.40
No. 2 Kraft	1.10	@	1.15
Sulphate—			
Bleached	1.85	@	2.15

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—			
Bleached	1.75	@	3.75
Easy Bleaching	1.75	@	1.90
News	1.40	@	1.65
Mitscherlich unbleached	2.00	@	2.25
Kraft (Domestic)	1.25	@	2.75

(Delivered Paper Mills)

Soda Bleached	2.00	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	3.80	@	4.00
New White, No. 2	3.00	@	3.25
Silesias No. 1	3.25	@	4.00
New Unbleached	5.25	@	5.75
New Soft Blacks	2.75	@	3.00
Blue Overall	3.00	@	3.50
Fancy	1.25	@	1.50
Washables	1.00	@	1.25
Mixed Khaki Cuttings	2.50	@	3.00
Pink Corset Cuttings	2.75	@	3.25
O. D. Khaki Cuttings	3.00	@	3.25
Men's Corduroy	1.00	@	1.25
New Mixed Blacks	2.25	@	2.50

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	2.25
White, No. 2—			
Repacked	1.75	@	2.00
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.00	@	1.25
Black Stockings	2.00	@	2.25
Roofing Rags—			
No. 1	.53	@	.58
No. 2	.48	@	.53
No. 3	.43	@	.48
No. 4	.38	@	.43
No. 5A	.33	@	.38

Foreign Rags

New Rags

New Dark Cuttings	1.30	@	1.40
New Mixed Cuttings	1.50	@	1.60
New Light Silesias	3.00	@	3.25
Light Flannelettes	2.50	@	2.75
Unbleached Cuttings	4.50	@	5.00
New White Cuttings	4.00	@	4.25
New Light Oxfords	3.00	@	3.25
New Light Prints	1.85	@	2.25

Old Rags

No. 1 White Linens	5.25	@	5.50
No. 2 White Linens	4.50	@	4.75
No. 3 White Linens	3.25	@	3.75
No. 4 White Linens	1.75	@	2.25
No. 1 White Cotton	3.50	@	3.75
No. 2 White Cotton	2.75	@	3.25
No. 3 White Cotton	2.25	@	2.50
No. 4 White Cotton	1.40	@	1.50
Extra Light Prints	1.80	@	2.00
Ord. Light Prints	1.60	@	1.75
Med. Light Prints	1.40	@	1.55
Dutch Blue Cottons	1.35	@	1.40
French Blue Linens	1.80	@	1.90
German Blue Linens	1.70	@	1.80
German Blue Cottons	1.20	@	1.25
Checks and Blues	1.25	@	1.30
Lindsay Garments	.75	@	.80
Dark Cottons	.70	@	.75
Old Shopperies	.55	@	.60
New Shopperies	.60	@	.65
French Blues	1.25	@	1.30

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	.90	@	1.00
Domestic	1.00	@	1.10
Wool Tares, light	.70	@	.80
Wool Tares, heavy	.70	@	.80
Bright Bagging	.70	@	.75
Small Mixed Rope	.59	@	.60
Manila Rope—			
Foreign	1.35	@	1.40
Domestic	1.40	@	1.50
New Burlap Cut	1.00	@	1.50
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	1.70	@	1.80
Ordinary Hard White No. 1	1.55	@	1.65
Hard White No. 2	1.30	@	1.40
Soft White No. 1	1.35	@	1.45
Flat Stock—			
Stitchless	.55	@	.65
Overissue Mag	.55	@	.65
Solid Flat Book	.50	@	.55
Crumpled No. 1	.40	@	.45
Solid Book Ledger	1.50	@	1.75
Ledger Stock	.45	@	.55
New B. B. Chips	.20	@	.25
Manilas—			
New Env. Cut	1.25	@	1.35
New Cuttings	1.00	@	1.05
Extra No. 1 old	.80	@	.90
Print	.35	@	.40
Bogus Wrapper	.30	@	.35
Container	.25	@	.30
Old Kraft Machine—			
Compressed bales	.60	@	.70
News—			
No. 1 White News	1.00	@	1.05
Strictly Overissue	.45	@	.50
Strictly Folded	.30	@	.35
No. 1 Mixed Paper	.15	@	.20

LOCKWOOD'S DIRECTORY

OF THE PAPER AND ALLIED TRADES

1933 EDITION

CORRECTED UP-TO-DATE

CONTENTS

Entire contents classified under separate headings for the United States and Canada, alphabetically and geographically arranged by states.

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Classified List of Pulp Mill Products
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Glazed and Coated Paper Manufacturers
Idle Mills
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Twine Manufacturers
Vegetable Parchment Manufacturers
Wall Paper Printers
Water Marks and Brands
Waxed Paper Manufacturers

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1864 **1933**

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Seamless felts for fast running.
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Purity 99½%

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Twines

(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¼	@	.12¼
Tube Rope—			
4-ply and larger	.10¼	@	.10¾
Fine Tube Rope—			
4-ply	.12¼	@	.12¾
3-ply	.13¼	@	.13¾
2-ply	.14¼	@	.14¾
Paper Makers Twine			
Balls	.09¼	@	.11¼
Box Twine, 2-3 ply	.11¼	@	.12¾
Jute Rope	.09	@	.10
White Hemp	.12¼	@	.12¾
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.23	@	.28

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¼
No. 2 S.&S.C. Book	.05¼	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¼
No. 1 Fibre	.04¼	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	3.50	@	4.50
Southern Kraft	2.62½	@	—
No. 2 Kraft	2.62½	@	—
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07¼
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	45.00	@	—
Sheets	50.00	@	—
Boards, per ton—			
Plain Chip	27.50	@	—
Solid News	30.00	@	—
Manila Lined Chip	37.50	@	—
Patent coated	47.50	@	—
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.50	@	1.55
No. 1 Hard White	1.40	@	1.45
No. 1 Soft White	1.00	@	1.10
Ledger & Writings	.55	@	.60
Solid Books	.45	@	.50
Blanks	1.00	@	1.05
Krafts	.70	@	.80
New Kraft Cuts	1.15	@	1.25
Manila Env. Cuts	1.25	@	1.30
Ex. No 1 Manila	.90	@	1.00
Print Manila	.30	@	.40
Overissue News	.45	@	.50
Old Newspapers—			
No. 1	.45	@	.50
Mixed Papers—			
No. 1	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.02¾
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	46.00	@	—
Straw Board	32.00	@	—
News Board	30.00	@	—
Chip Board	30.00	@	—
Wood Pulp Board	70.00	@	80.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	62.00	@	65.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1 50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01	@	.01½
Blue Overall	.03	@	.03½
Cottons—According to grades—			
Washable, No. 2	.01	@	.02
New Blue	.01	@	.02
Fancy	.01½	@	—
New Black Soft	.02	@	.03
New Light Seconds	.01	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.03½
No. 2 Mixed	.02½	@	.03
Corduroy	.02	@	.02½
New Canvas	.03½	@	.04
New Black Mixed	.02½	@	.03

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	1.75	@	2.00
M. G.	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.80

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	—
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	1.60	@	1.70
No. 2 Hard White	1.50	@	1.60
No. 1 Soft White	1.40	@	1.45
No. 2 Soft White	1.10	@	1.15
No. 1 Mixed	.50	@	.60
No. 2 Mixed	.40	@	.50
Solid Ledger Stock	1.00	@	1.10
Writing Paper	.65	@	.70
No. 1 Books, heavy	.55	@	—
No. 2 Books, light	.40	@	—
No. 1 New Manila	1.10	@	1.15
No. 1 Old Manila	.60	@	.65
Print Manila	.40	@	.45
Container Manila	.35	@	.40
Old Kraft	.85	@	.90
Common Paper	.20	@	.25
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.25	@	.30
Binders Board, Chip	.25	@	.30
Corrugated Board	.35	@	.45
Overissue News	.45	@	.50
Old Newspaper	.30	@	.35

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11½
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¾
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	—	@	.04¾
No. 2 Kraft	—	@	.02½

(F. o. b. Boston)

Southern Kraft	.02¾	@	—

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

(Delivered New England points)

News Print, rolls	44.50	@	—
Straw Board, rolls.009	—	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	—	@	30.00
Chip Board	27.50	@	—
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	—	@	37.50
Single White, Patent Coated News Board—Bender	45.00	@	55.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Soft White	1.40	@	1.60
No. 1 Old Manila	.50	@	.60
No. 1 Mixed	.60	@	.70
No. 2 Mixed	.40	@	.50
Solid Ledger Books	1.20	@	1.40
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.60	@	.70
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	—	@	.30
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.50	@	.60
White Blank News	.80	@	.85
No. 1 Kraft	.65	@	.70
Manila	.80	@	.90
No. 1 Mixed Papers	.12½	@	.15
Print Manila	.30	@	.40
Overissue News	.35	@	.45
Old Newspapers	.25	@	.30
Box Board, Chip	.17½	@	.20
Corrugated Boxes	—	@	.20
Screening Wrappers	.25	@	.32½

Bagging

(F. o. b. Boston)

Gunny No. 1—			
Foreign	.95	@	1.00
Domestic	.60	@	.70
Manila Rope—			
Foreign	1.37½	@	1.42½
Domestic	—	@	1.60
Transmission Rope	—	@	.90
Mixed Strings	.25	@	.30
Jute Rope	—	@	.75
Jute Carpet Threads	.25	@	.30
Bleachery Burlap	1.75	@	2.00
Scrap Burlap	.50	@	.75
No. 1 Scrap Burlap	.65	@	.75
Scrap Sisal	.80	@	—
Scrap Sisal for shredding	—	@	.90
Wool Tares, heavy	.65	@	.75
New Burlap Cutting	.75	@	.90
Australian Wool Pouches	1.75	@	2.00
Heavy Baling Bagging	.90	@	1.10
Paper Mill Bagging	.40	@	.50
Bagging No. 2	.20	@	.25
No. 1 Burlap	1.75	@	2.00

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	—	@	.01½
New White No. 1	.03¼	@	.04
New White No. 2	.02¾	@	.03¼
Silesias No. 1	—	@	.02
New Black Silesias	.02½	@	.02¾
New Unbleached	.05	@	.05¼
Fancy	—	@	.02½
Washable	—	@	.01¾
Cottons—According to grades—			
Blue Overalls	—	@	.03¼
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03½
O. D. Khaki	.03½	@	.03¾
Corduroy	.02¾	@	.03
New Canvas	—	@	.05
B.V.D. Cuttings	.04	@	.04¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	1.50	@	1.75
White No. 2—			
Repacked	.02¼	@	02½
Miscellaneous	.02	@	.02¼
Twos and Blues	.90	@	1.00
Thirds and Blues—			
Repacked	.75	@	.85
Miscellaneous	.70	@	.75
Black Stockings	2.00	@	2.25
Roofing Stock—			
No. 1	.35	@	.40
No. 2	.30	@	.35
No. 3	.25	@	.30

Foreign Rags

(F. o. b. Boston)

Dark Cottons	.50	@	.60
New No. 1 White Shirt Cuttings	3.75	@	4.00
Dutch Blues	1.25	@	1.50
New Checks & Blues	2.25	@	2.50
Old Fustians	—	@	.75
Old Linsey Garments	.55	@	.65

TORONTO

Paper

(F. o. b. Mill)

Bond			
No. 1 Sulphite	.09¼	@	—
No. 2 Sulphite	.07½	@	—
No. 1 Colored	.09¼	@	—
No. 2 Colored	.08½	@	.10½
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	10.00	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.40	@	—
White Wrap	2.00	@	—
"B" Manila	4.90	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.40	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp

(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	48.00	@	58.00
Sulphate	50.00	@	—

Old Waste Paper

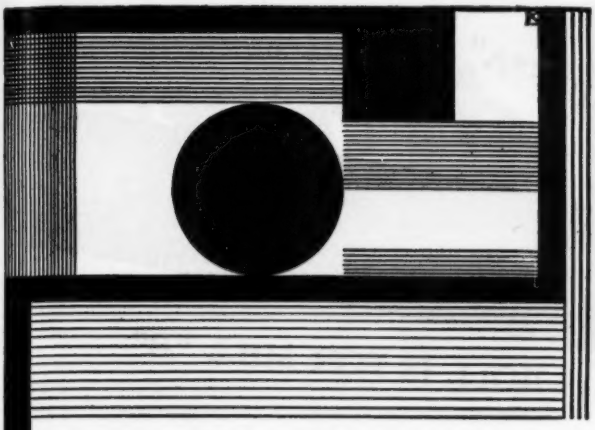
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	1.80	@	—
Soft White	1.40	@	—
White Blk. News	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock	.80	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut	1.25	@	—
Printed Manilas	.55	@	—
Kraft	1.75	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¼



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